Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.





Reserve

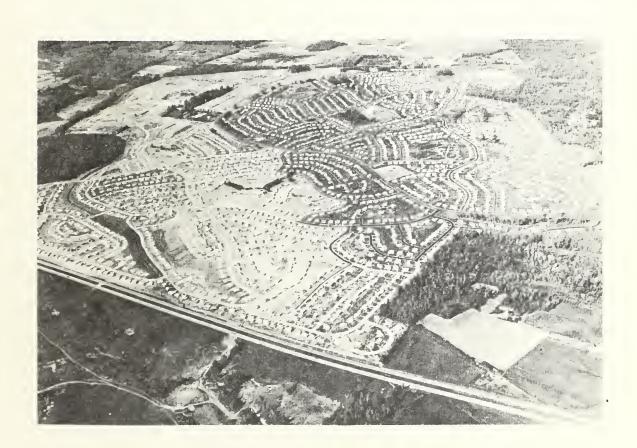
Soil Conservation Service

Engineering Division

January 1975

United States Department of Agriculture So33 Urban Hydrology for **Small Watersheds**

Technical Release Number 55



PREFACE

This technical release was prepared by hydraulic engineers from the Engineering and Watershed Planning Unit (E&WP), Upper Darby, Pa., and the Central Technical Unit, Hyattsville, Md. Valuable contributions were received from the Engineering Division, Washington, D.C., E&WP Units at Lincoln, Nebr., Portland, Oreg., and Fort Worth, Tex., and from state hydrologists and engineers.

This technical release is presented as a guide for field personnel in estimating the effects of land use changes and structural measures on hydraulic and hydrologic parameters, runoff volume, and peak rates of discharge. Field engineers should recognize that some of the proposed methods are in the formative stage and thus have not been fully tested. The results should be compared with other available methods, and engineering judgment should be used in arriving at a final estimate. Careful consideration should be given to the scope and importance of the job when deciding on a particular procedure. It is not intended that all procedures fit all situations that arise.

As more data become available procedures described in this technical release will be revised.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

TECHNICAL RELEASE NO. 55

URBAN HYDROLOGY FOR SMALL WATERSHEDS

CONTENTS

	Page
Chapter 1. Effects of urbanization on runoff volume and peak rates of discharge	
Introduction. Effects of urban development. Volume parameters. Soil type. Cover type. Time parameters. Slope. Flow length. Surface roughness. Methodology.	1-1 1-2 1-2 1-2 1-3 1-3 1-3 1-3
Chapter 2. Estimating runoff from urban areas	
Introduction. Runoff equation. Effect of urbanization on runoff. Urban runoff curve numbers. Example 2-1. Example 2-2. Example 2-3. Example 2-4.	2-1 2-1 2-4 2-4 2-6 2-7 2-7 2-8
Chapter 3. Time of concentration, travel time, and lag	
Introduction. Computation of travel time. Overland flow. Storm sewer or road gutter flow. Channel flow. Example 3-1. Computation of lag. Hydrograph method. Modified curve number method. Example 3-2.	3-1 3-1 3-2 3-3 3-3 3-5 3-5 3-5 3-5

	Page
Chapter 4. Peak discharges (appendix D charts)	
Introduction Modification of peak discharge due to urbanization Example 4-1	4-1
Chapter 5. Tabular and graphical methods of determining paischarges	peak
Introduction	5-1 5-2 5-5
Chapter 6. SCS-TR-20 Method of determining peak flow	
Introduction	6-1 6-1
Chapter 7. Methods for controlling peak discharges from ing areas	urbaniz-
Introduction	7-1 7-1 7-6 7-9
Appendix A. Urban hydrology bibliography	B-1 for 24-
Appendix D. Peak rates of discharge for small watersheds Appendix E. Adjustment factors for peaks determined using	D-1 g charts
in appendix D	Urban
	(2)
2-1 Schematic curves of accumulated rainfall (P), runoff infiltration plus initial abstraction (F + I a) showing relation expressed by equation 2-5	ng the

Figure	Page
2-2 Percentage of impervious areas vs. composite CN's for given pervious area CN's	2 - 6
3-1 Average velocities for estimating travel time for overland flow	3 - 2
3-2 Urban watershed for example 3-1	3-3
3-3 Curve number method for estimating lag (L) for homogeneous watersheds under natural conditions up to 2,000 acres	3-7
3-4 Factors for adjusting lag from equation 3-2 or figure 3-3 when the main channel has been hydraulically improved	3-8
3-5 Factors for adjusting lag from equation 3-2 or figure 3-3 when impervious areas occur in the watershed	3 - 9
4-1 Factors for adjusting peak discharges for a given future- condition runoff curve number based on the percentage of impervious area in the watershed	4-2
4-2 Factors for adjusting peak discharges for a given future- condition runoff curve number based on the percentage of hydraulic length modified	4-2
5-1 Sample watershed for example 5-1	5-2
5-2 Peak discharge in csm per inch of runoff versus time of concentration ($T_{\rm c}$) for 24-hour, type-II storm distribution	5 - 5
7-1 Approximate single-stage structure routing for weir flow structures up to 150 csm release rate and pipe flow structures up to 300 csm release rate	7-7
7-2 Approximate single-stage structure routing for weir flow structures over 150 csm release rate and pipe flow structures over 300 csm release rate	7-8
7-3 Stage-discharge and stage-storage relationship for structure A in example 7-1	7-10
D-1 Storm distribution regions, Pacific Coast states	D-2
D-2 Peak rates of discharge for small watersheds (24-hour, type-II storm distribution)	D-3
E-1 Hydraulic length and drainage area relationship	E-6
<u>Table</u>	
2-1 Runoff depth in inches for selected CN's and rainfall	2_2

Tab.	<u>le</u>	Page
2-2	Runoff curve numbers for selected agricultural, suburban, and urban land use	2-5
5 -1	Basic data used in example 5-1	5 - 3
5 - 2	Discharge summary table for example 5-1	5 - 4
5 -3	Tabular discharges for type-II storm distribution (csm/in)	5-7
7-1	Measures for reducing and delaying urban storm runoff	7-2
7-2	Advantages and disadvantages of measures for reducing and de- laying runoff	7-3
B-1	Soil names and hydrologic classifications	B- 2
E-l	Slope adjustment factors by drainage areas	E-2
E-2	Adjustment factors where ponding and swampy areas occur at the design point	E-3
E-3	Adjustment factors where ponding and swampy areas are spread throughout the watershed or occur in central parts of the watershed	E-4
	Adjustment factors where ponding and swampy areas are located only in upper reaches of the watershed	E-4

CHAPTER 1

EFFECTS OF URBANIZATION ON RUNOFF VOLUME AND PEAK RATES OF DISCHARGE

Introduction

This technical release analyzes the effects of urbanization in a watershed on hydraulic and hydrologic parameters and presents methods of estimating runoff volume and peak rates of discharge. Obtaining basic data on runoff volume and peak rates of discharge is difficult because conditions are constantly changing during the transition from rural to urban land use. At this time only general empirical relationships between the parameters that affect runoff and peak rates of discharge can be developed. Much research is being undertaken to better analyze the effects of urbanization through collection of runoff data and study of watershed models. Reports of progress in this field are being made continually. For additional information see the bibliography in appendix A.

As population density and land values increase, the effects of uncontrolled runoff become an economic burden and a serious threat to the health and well-being of a community and its citizens. Emphasis must be placed on providing solutions to the water problems caused by radical changes in land use. Estimating the magnitude and frequency of future flood events makes possible systematic planning and installation of structural and nonstructural measures to reduce hazards to acceptable levels.

Management of runoff from even minor storms is rapidly becoming an engineering requirement of local and state governments to help reduce flooding and stream erosion. Rapid deterioration of stream channels caused by increased storm runoff has had a detrimental impact on communities. Counties and states are adopting policies which limit the effects that changes in land use may have on the stream regimen within a development or watershed. These policies cover such areas as (1) assisting in the planned management of water resources, including storm drainage, throughout the watershed; (2) promoting and encouraging the inclusion of flood storage in all planned reservoirs; and (3) encouraging and assisting in planning for onsite retention of runoff through the use of temporary storage structures and infiltration devices.

There is a need for thorough understanding of the problems associated with the rapid conversion of land use and for adequate technical procedures to assist local communities, municipalities, and planning groups in assessing the effects of changed land use on streamflow.

Effects of Urban Development

An urban or urbanizing watershed can be defined as an area in which all or part of the watershed will be covered by impervious structures, such as roads, sidewalks, parking lots, and houses. Urban stream channels may

also be supplemented by some form of artificial drainage system, such as paved gutters and storm sewers.

The effect of urbanization on the water regimen has long been recognized. Investigations to evaluate the factors involved have been going on for over 35 years. Ideally, hydrologic studies to determine volume and rates of runoff should be based on long-term stationary streamflow records for the area being investigated. Such records are seldom available for small drainage areas, and because of the time involved in converting a watershed from rural to urban conditions, available records normally are not adequate. It becomes necessary to estimate the magnitude and frequency of peak rates of runoff through modeling of measurable watershed characteristics. An understanding of these characteristics is required for judging how to alter parameters to reflect changing watershed conditions.

Urbanization of a watershed changes its response to precipitation. The most common effects are reduced infiltration and decreased travel time, which result in significantly higher peak rates of runoff. The volume of runoff is determined primarily by the amount of precipitation and by infiltration characteristics related to soil type, antecedent rainfall, type of vegetal cover, impervious surfaces, and surface retention. Travel time is determined primarily by slope, flow length, depth of flow, and roughness of flow surfaces. Peak rates of discharge are based on the relationship of the above parameters as well as the total drainage area of the watershed, the location of the development in relation to the total drainage area, and the effect of any flood control works or other manmade storage. Peak rates of discharge are also influenced by the distribution of rainfall within a given storm event. SCS uses three standard rainfall distributions -- types I, IA, and II. Type II-distribution applies to all areas of the United States except for parts of the Pacific Coast states. For rainfall distribution in the Pacific Coast states, refer to the map in appendix D.

Volume Parameters

Soil type

Since urban areas are seldom completely covered by impervious structures, soil properties are an important factor in estimating the total volume of direct runoff. The infiltration and percolation rates of soils indicate their potential to absorb rainfall and thereby reduce the amount of direct runoff. Soils having a high infiltration rate (sands or gravels) have a low runoff potential, and soils having a low infiltration rate (clays) have a high runoff potential. Urbanization on soils with a high infiltration rate increases the volume of runoff and peak discharge more than urbanization on soils with a low infiltration rate.

Cover type

The type of cover and its hydrologic condition affects runoff volume through its influence on the infiltration rate of the soil. Fallow land yields more runoff than forested land for a given soil type. Covering areas with impervious material reduces surface storage and infiltration and increases the volume of runoff.

Some rainfall is retained on the surface and by vegetation before runoff begins. Interception is rainfall that is caught by foliage, twigs, branches, leaves, etc. This rainfall is lost to evaporation and thus never reaches the ground surface. Increasing the vegetal cover increases the amount of interception.

Surface depression storage begins when precipitation exceeds infiltration. Overland flow starts when the surface depressions are full. The water in depression storage is not available as direct runoff.

Initial abstraction is the sum of interception, depression storage, and infiltration before runoff begins. It occurs on all types of cover, from pasture in good condition to concrete pavement. However, the amount of initial abstraction is less on concrete pavement than on pasture.

Time Parameters

Slope

Urbanization can change the effective slope of a watershed if flow paths are altered by channelization and by terracing areas for building lots, parking lots, roads, and diversion ditches. The slopes of storm sewers, street gutters, roads, and overland flow areas as well as stream channels are significant in determining travel times through urban watersheds.

Flow length

Flow length may be reduced if natural meandering streams are changed to straight channels. It may be increased if overland flows are diverted through diversions, storm sewers, or street gutters to larger collection systems.

Surface roughness

Flow velocity normally increases significantly when the flow path is changed from flow over rough surfaces of woodland, grassland, and natural channels to sheet flow over smooth surfaces of parking lots, diversions, storm sewers, gutters, and lined channels.

Methodology

Procedures outlined in SCS National Engineering Handbook, Section 4, Hydrology (NEH-4), are adequate for determining volumes, peak rates, and hydrographs of runoff from urban areas. The increase in the volume of runoff due to urbanization depends more on the percentage of impervious area than on any of the other watershed constants. Changes in the time-area relationship (lag time) can be estimated by hydraulic analysis of overland velocities and storage. Changes in channel routing can be estimated by hydraulic analysis of channel velocities and storage.

The soil-cover complex and associated runoff curve number procedure outlined in NEH-4 can be used to measure the change in runoff volume caused by urbanization. Runoff curve numbers for land use and treatment practices

for hydrologic soil groups were developed from daily rainfall records from small agricultural watersheds. By using land use patterns found in an urban area and accounting for impervious areas, a composite weighted curve number representing runoff potential from the watershed can be determined.

Special attention should be given to the computation of time of concentration and travel time. Once storm drains are installed, the flow pattern may be changed so significantly that flow retardance cannot be represented by factors based on runoff curve numbers or overland flow. Velocities of flow through culverts and channels should be computed using hydraulic procedures that take into consideration the characteristics of the flow paths.

When urbanization is proposed in only part of a watershed and peak discharges are desired downstream of the development, consideration should be given to subdividing the watershed into areas of similar land use. The hydrographs from these areas are combined and routed to the outlet.

Methods of determining peak rates of runoff are outlined in chapter 16 of NEH-4. Examples 1 and 2 in chapter 16 of NEH-4 show the development of the total hydrograph. Hydrographs are used when timing effects of tributaries must be analyzed or hydrographs must be routed. Example 4 in chapter 16 of NEH-4 describes a procedure for computing only the peak rate of discharge. This approach can be used when runoff characteristics within a watershed are homogeneous and routing is not required.

Examples in this technical release illustrate the effects of urbanization on volumes and peak rates of runoff using procedures outlined in chapter 16 of NEH-4. Chapter 2 in this technical release discusses runoff volume from urban areas and presents methods of developing runoff curve numbers for urban areas. Chapter 3 discusses time of concentration and travel time as they are affected by urbanization and presents examples of the computation of these parameters. Chapters 4, 5, and 6 present methods of computing peak rates of discharge using standard charts applicable to small drainage areas, charts for preliminary planning and evaluation, and SCS-TR-20 procedures for dealing with more complicated watershed conditions. Chapter 7 reviews methods of surface and subsurface storage used to reduce peak discharges caused by urbanization.

As more information is gathered and analyzed, better procedures may be developed to analyze the effects of urbanization. Procedures presented in this technical release will be revised periodically to incorporate results of future research.

CHAPTER 2

ESTIMATING RUNOFF FROM URBAN AREAS

Introduction

Effective rainfall is that portion of precipitation that produces direct runoff, which is water that enters the stream channels during a storm or soon after and forms a runoff hydrograph. Losses or abstractions are that portion of precipitation that does not contribute to direct runoff. Losses occurring on urban watersheds are similar to those occurring on natural watersheds. The amount of runoff from a storm event largely depends on detention, infiltration, evapotranspiration, etc., and is related to soil type, type of vegetation, and amount of impervious cover.

With proper modifications and assumptions, the soil-cover-complex method described in NEH-4 can be used to estimate runoff from urban areas. The variables used in this method apply to runoff from both agricultural and urban watersheds. A combination of a hydrologic soil group (soil) and a land use and treatment class (cover) is used to determine the hydrologic soil-cover complex. The effect of the hydrologic soil-cover complex on the amount of rainfall that runs off is represented by a runoff curve number, referred to as CN. Chapters 7, 8, 9, and 10 of NEH-4 discuss the development of soil-cover complexes including soils, cover, treatment practices for agricultural areas, and resulting runoff.

In an urban watershed, the cover usually consists of both pervious and impervious surfaces. Impervious surfaces, such as roofs, streets, sidewalks, driveways, and parking lots, have some initial abstraction before runoff occurs. However, during an intense part of a storm event, nearly 100 percent of the rainfall may run off. Both initial abstraction and infiltration should be considered for pervious surfaces such as lawns, parks, and playing fields.

Runoff Equation

Figure 2-1 shows schematic curves of accumulated storm rainfall P, runoff Q, and infiltration plus initial abstraction (F + I_a). For convenience in estimating runoff, initial abstraction includes all the storm rainfall occurring before surface runoff starts.

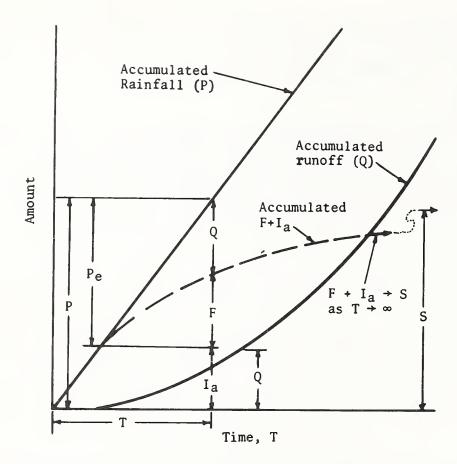


Figure 2-1.--Schematic curves of accumulated rainfall (P), runoff (Q), and infiltration plus initial abstraction (F + $\rm I_a$) showing the relation expressed by equation 2-5.

Assume

$$\frac{F}{S} = \frac{Q}{P_e}$$
 (Eq. 2-1)

where F is the infiltration occurring after runoff begins in inches, S is the potential abstraction in inches, Q is the actual direct runoff in inches, and P_e is the potential runoff or effective storm runoff (storm rainfall minus the initial abstraction) in inches.

With $F = P_e - Q$, equation 2-1 can be written as

$$Q = \frac{P_e^2}{P_e + S}$$
 (Eq. 2-2)

The initial abstraction (I_a) in inches, estimated from an empirical relation based on data from small watersheds, is

$$I_a = 0.2S$$
 (Eq. 2-3)

Thus

$$P_e = P - I_a = P - 0.2S$$
 (Eq. 2-4)

where P is the total storm rainfall in inches. Substituting equation 2-4 in equation 2-2,

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$
 (Eq. 2-5)

Potential abstraction S is related to the soil and cover conditions of a watershed. The runoff curve number, which is also related to soil and cover conditions, is related to potential abstraction S by

$$CN = \frac{1,000}{S+10}$$
 (Eq. 2-6)

from which

$$S = \frac{1,000}{CN} - 10$$
 (Eq. 2-7)

The solution to equation 2-5 is shown in table 2-1 for a range of CN's and total rainfall amounts.

Table 2-1. -- Runoff depth in inches for selected CN's and rainfall amounts

Rainfall (inches)	Curve Number (CN)1/								
(Inches)	60	65	70	75	80	85	90	95	98
1.0	0	0	0	0.03	0.08	0.17	0.32	.56	.79
1.2	0	0	0.03	0.07	0.15	0.28	0.46	.74	.99
1.4	0	0.02	0.06	0.13	0.24	0.39	0.61	.92	1.18
1.6	0.01	0.05	0.11	0.20	0.34	0.52	0.76	1.11	1.38
1.8	0.03	0.09	0.17	0.29	0.44	0.65	0.93	1.29	1.58
2.0	0.06	0.14	0.24	0.38	0.56	0.80	1.09	1.48	1.77
2.5	0.17	0.30	0.46	0.65	0.89	1.18	1.53	1.96	2.27
3.0	0.33	0.51	0.72	0.96	1.25	1.59	1.98	2.45	2.78
4.0	0.76	1.03	1.33	1.67	2.04	2.46	2.92	3.43	3.77
5.0	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.42	4.76
6.0 7.0 8.0 9.0	1.92 2.60 3.33 4.10 4.90	2.35 3.10 3.90 4.72 5.57	2.80 3.62 4.47 5.34 6.23	3.28 4.15 5.04 5.95 6.88	3.78 4.69 5.62 6.57 7.52	4.31 5.26 6.22 7.19 8.16	4.85 5.82 6.81 7.79 8.78	5.41 6.41 7.40 8.40 9.40	5.76 6.76 7.76 8.76 9.76
11.0	5.72	6.44	7.13	7.82	8.48	9.14	9.77	10.39	10.76
12.0	6.56	7.32	.8.05	8.76	9.45	10.12	10.76		11.76

^{1/} To obtain runoff depths for CN's and other rainfall amounts not shown in this table, use an arithmetic interpolation.

Effect of Urbanization on Runoff

Initial abstraction consists of interception, infiltration, and depression storage that must be satisfied before runoff begins. Urban initial abstraction has been found to be correlated with slope of the impervious area. However, because of the limited scope of the research data available, no attempt has been made to revise the basic runoff equation to apply exclusively to urban areas.

Investigations have also shown that runoff from small (less than annual) rainfall events comes primarily from the impervious areas. However, both the pervious and impervious areas contribute to runoff for the larger, less frequent events. If the pervious portion of an urban area has a CN of 60 to 65, approximately 2 inches of rainfall is needed before runoff begins. Most 24-hour rainfall values used in computing peak rates of flow are over 2 inches. Therefore, for urban analysis the total watershed area can be assumed to contribute to storm runoff.

Urban Runoff Curve Numbers

Several factors should be considered when computing the anticipated future CN for urban areas. The amount of runoff can vary depending on whether house gutters connect directly to storm drains, outlet onto impervious driveways, or outlet onto lawns or other pervious areas where infiltration can occur. General building practices or codes within a development may be helpful in determining runoff flow paths. Some areas have zoning ordinances on how storm runoff from individual houses must be handled.

In determining urban CN's, consideration should be given to whether heavy equipment compacted the soil significantly more than natural conditions, whether much of the pervious area is barren with little sod established, and whether grading has mixed the surface and subsurface soils causing a completely different hydrologic condition. Any one of the above could cause a soil normally in hydrologic group A or B to be classified in group B or C, respectively. In many areas of the country, lawns are heavily irrigated. This may significantly increase the moisture content in the soil over that under natural rainfall conditions.

Table 2-2 gives CN's for agricultural, suburban, and urban land use classifications. The suburban and urban CN's are based on typical land use relationships that exist in some areas. They should only be used when it has been determined that the area under study meets the criteria for which these CN's were developed.

There will be areas to which the values in table 2-2 do not apply. The percentage of impervious area for the various types of residential areas or the land use condition for the pervious portions may vary from the conditions assumed in table 2-2. A curve for each pervious CN can be developed to determine the composite CN for any density of impervious area. Figure 2-2 has been developed assuming a CN of 98 for the impervious

Table 2-2.--Runoff curve numbers for selected agricultural, suburban, and urban land use. (Antecedent moisture condition II, and I_a = 0.2S)

		OLOGIC	SOIL	GROUP
LAND USE DESCRIPTION	А	В	C	D
Cultivated land ': without conservation treatment	72	81	88	91
: with conservation treatment	62	71	78	81
Pasture or range land: poor condition	68	79	86	89
good condition	39	61	74	80
Meadow: good condition	30	58	71	78
Wood or Forest land: thin stand, poor cover, no mulch	45	66	77	83
good cover ² /	25	55	70	77
Open Spaces, lawns, parks, golf courses, cemeteries, etc.				
good condition: grass cover on 75% or more of the area	3 9	61	74	80
fair condition: grass cover on 50% to 75% of the area	49	69	79	84
Commercial and business areas (85% impervious)	89	92	94	95
Industrial districts (72% impervious).	81	88	91	93
Residential: 3/				
Average lot size Average % Impervious 4/				
1/8 acre or less 65	77	85	90	92
1/4 acre 38	61	75	83	87
1/3 acre 30	57	72	81	86
1/2 acre 25	54	70	80	85
1 acre 20	51	68	79	84
Paved parking lots, roofs, driveways, etc.5/	98	98	98	98
Streets and roads:				
paved with curbs and storm sewers 5/	98	98	98	98
gravel	76	85	89	91
dirt	72	82	87	89

For a more detailed description of agricultural land use curve numbers refer to National Engineering Handbook, Section 4, Hydrology, Chapter 9, Aug. 1972.

 $[\]frac{2}{2}$ Good cover is protected from grazing and litter and brush cover soil.

^{2/} Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

^{5/} In some warmer climates of the country a curve number of 95 may be used.

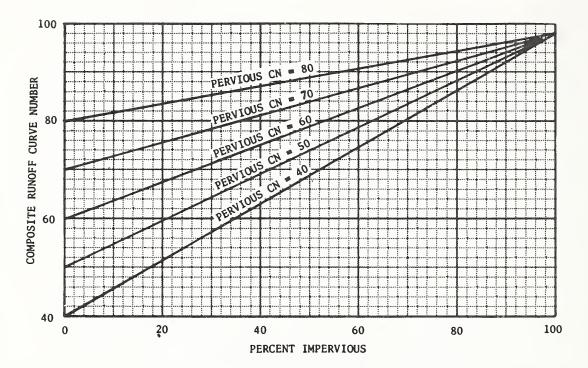


Figure 2-2.--Percentage of impervious areas vs. composite CN's for given pervious area CN's.

area. The curves in figure 2-2 can help in estimating the increase in runoff as more and more land within a given area is covered with impervious material.

There are a number of methods available for computing the percentage of impervious area in a watershed. Some methods include using U.S. Geological Survey topographic maps, land use maps, aerial photographs, and field reconnaissance. Care must be exercised when using methods based on such parameters as population density, street density, and age of the development as a means of determining the percentage of impervious area. The available data on runoff from urban areas are not yet sufficient to validate widespread use of these methods.

Example 2-1

Compute the runoff from 5 inches of rainfall for a 1,000-acre watershed to be converted to a suburban development. All the soils are in hydrologic soil group C. The proposed land use is 50 percent detached houses with lot size 1/4 acre; 10 percent townhouses with lot size 1/8 acre; 25 percent streets with curbs and gutters, schools, parking lots, plazas; and 15 percent open space, parks, schoolyards, etc., with good grass cover.

1. Compute the weighted runoff curve number.

		Table 2-2 curve	
Land use	Percent	number	Product
Detached houses with lot size 1/4 acre	50	83	4,150
Townhouses with lot size 1/8 acre	10	90	900
Streets with curbs, plazas, etc.	25	98	2,450
Open space, parks, etc.	_15_	74	1,110
	100		8,610

Thus

Weighted CN =
$$\frac{8,610}{100}$$
 = 86

2. From table 2-1 using CN = 86 and P = 5 interpolate to read Q = 3.47 inches.

Example 2-2

Compute the runoff from 6.3 inches of rainfall for a 1,000-acre watershed to be converted to a suburban development. The soils are in hydrologic soil group B. Forty percent of the development is impervious with all impervious areas connected; 60 percent is pervious and considered to be in good grass cover.

- 1. From table 2-2 read pervious CN = 61.
- 2. From figure 2-2 read CN = 76.
- 3. From table 2-1 using CN = 76 and P = 6.3 interpolate to read Q = 3.64 inches.

Example 2-3

Compute the runoff curve number for a 1,000-acre watershed. The hydrologic soil group is 50 percent B and 50 percent C interspersed throughout the watershed. The land use is:

- 40 percent residential area that is 30 percent impervious
- 12 percent residential area that is 65 percent impervious
 - 8 percent paved roads with open ditches
- 10 percent paved roads with curbs and storm sewers
- 16 percent open land with 50 percent fair cover and 50 percent good cover
- 14 percent parking lots, plazas, schools, etc. (all impervious)

Using table 2-2 and figure 2-2, display the data given and compute the runoff curve number.

	Hydrologic soil group			up			
Land use		В			С		
Residential (30 pct. impervious)	Pct. 20	<u>CN</u> 72	Product 1,440	Pct. 20	<u>CN</u> 81	Product 1,620	
Residential (65 pct. impervious)	6	85	51 0	6	90	540	
Roads with open ditches	4	89	356	4	92	368	
Roads with curbs and sewers	5	98	490	5	98	490	
Open land:							
Fair cover	4	69	276	4	79	316	
Good cover	4	61	244	4	74	296	
Parking lots, plazas, etc.	7	98	686	7	98	686	
	50		4,002	50		4,316	

Thus

Weighted CN =
$$\frac{4,002 + 4,316}{100}$$
 = 83.18 (use 83)

Example 2-4

A 175-acre watershed is 30 percent agricultural and 70 percent urban land. The agricultural area is 40 percent cultivated land with conservation treatment, 35 percent meadow in good condition, and 25 percent forest land with good cover. The urban area is residential: 60 percent is 1/3-acre lots, 25 percent is 1/4-acre lots, and 15 percent is streets and roads with curbs and storm sewers. The entire watershed is in B hydrologic soil group.

Display the data given and compute the weighted composite runoff curve number using curve numbers for the given land use in table 2-2.

Acres	Curve Number	Product
(52)		
21	71	1,491
18	58	1,044
13	55	715
(123)		
74	72	5,328
31	75	2,325
		,
18	98	1,764
175		12,667
	(52) 21 18 13 (123) 74 31	(52) 21 71 18 58 13 55 (123) 74 72 31 75 18 98

Thus

Weighted CN =
$$\frac{12,667}{175}$$
 = 72.4 (use 72)

CHAPTER 3

TIME OF CONCENTRATION, TRAVEL TIME, AND LAG

Introduction

Urbanization commonly increases the velocity at which water can flow from its point of impact on the watershed to the watershed outlet. Time of concentration, travel time, and watershed lag are three related watershed parameters directly affected by the increased velocity. These parameters are widely used in determining peak rates of runoff.

Time of concentration is the time it takes for runoff to travel from the hydraulically most distant part of the watershed to the point of reference. It is usually computed by determining the water travel time through the watershed. In hydrograph analysis it is the time from the end of excessive rainfall to the point of inflection on the falling limb of the hydrograph. Lag can be considered as a weighted time of concentration and is related to the physical properties of a watershed, such as area, length, and slope. In simple hydrograph analysis, lag is the time from the center of mass of excessive rainfall to the peak rate of runoff. The time of concentration determines the shape of the runoff hydrograph. Thus, changes in the time of concentration cause changes in the resulting hydrograph. The extent of urbanization and stream modification affects the travel time of water through the watershed, which changes the time of concentration.

Two factors can contribute to a decrease in travel time. Urbanization generally decreases overland flow travel time by decreasing flow retardance and by reducing the interflow distance because there are more points of interception by gutters and other conveyances. Channelization decreases travel time by increasing velocities in improved channels. The travel path may be on the surface of the ground or below it (as subsurface flow) or in a combination of both. Urban hydrology studies have shown that the response time of subsurface flow is so much longer than that of surface flow that only surface (including sewer) flow travel time is of significance when determining peak discharges.

Computation of Travel Time

Overland flow, storm sewer or road gutter flow, and channel flow are the three phases of direct flow commonly used in computing travel time.

Overland flow

The travel time for overland flow in an urban area consists of the time it takes water to travel from the uppermost part of the watershed to a defined channel or inlet of the storm sewer system. This type of flow is significant in very small watersheds because a high proportion of travel time is due to overland flow. The velocity of overland flow can vary greatly with the surface cover and tillage as shown in figure 3-1. If the slope and land use of the overland flow segment are known, the average flow velocity can be read from figure 3-1. The travel time is

then computed by dividing the total overland flow length by the average velocity.

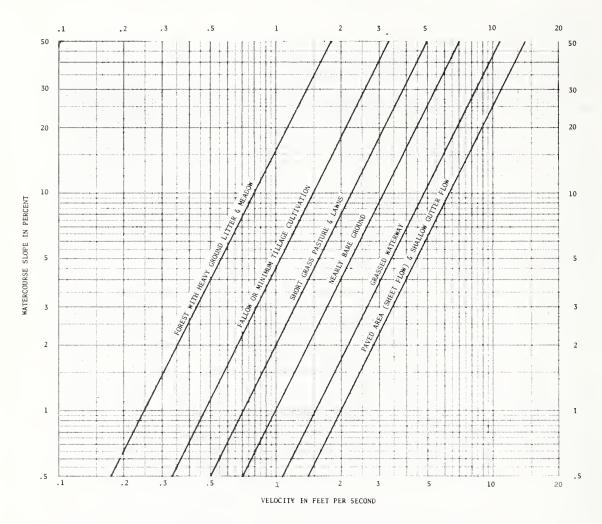


Figure 3-1.--Average velocities for estimating travel time for overland flow.

Storm sewer or road gutter flow

Travel time through the storm sewer or road gutter system to the main open channel is the sum of travel times in each individual component of the system between the uppermost inlet and the outlet. In most cases average velocities can be used without a significant loss of accuracy. During major storm events, the sewer system may be fully taxed and additional overland flow may occur, generally at a significantly lower velocity than the flow in the storm sewers. By using average conduit sizes and an average slope (excluding any vertical drops in the system), the average velocity can be estimated using Manning's formula.

Since the hydraulic radius of a pipe flowing half full is the same as when flowing full, the respective velocities are equal. Travel time may

be based on the pipe flowing full or half full. The travel time through the storm sewers is computed by dividing the length of flow by the average velocity. If flow is principally in shallow road gutters, the curve for overland flow in paved areas shown in figure 3-1 can be used to determine average velocity.

Channel flow

The travel time for flow in an open channel from the storm sewer outlet to the watershed outlet (or evaluation or design point) can be determined by using Manning's equation to compute average velocities. Bankfull velocities should be used to compute these averages. Channels may be in either natural or improved condition.

Example 3-1

An urbanized watershed is shown in figure 3-2. Three types of flow conditions exist from the furthermost point of the watershed to the outlet. Compute the travel time (T_t) and time of concentration (T_c) based on the following data:

Reach	Description of flow	Slope	Length
A to B	Overland (forest)	Percent 7	Feet 500
B to C	Overland (shallow gutter)	2	900
C to D	Storm drain with manhole covers, inlets, etc. (n=0.015; diameter 3 feet)	1.5	2,000
D to E	<pre>Open channel, gunite, trape- zoidal (b = 5; d = 3; z = 1.1; n = 0.019)</pre>	0.5	3,000

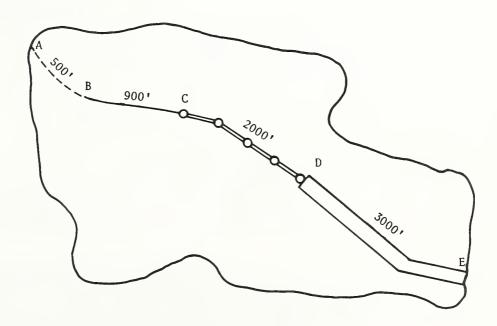


Figure 3-2.--Urban watershed for example 3-1.

1. Compute the overland flow travel time. Reach A to B (forest cover). From figure 3-1 for a slope of 7 percent read v = 0.7 ft/sec.

$$T_t = \frac{length}{velocity} = \frac{500 \text{ ft}}{0.7 \text{ ft/sec}} = 714 \text{ sec}$$

Reach B to C (street gutter). From figure 3-1 for a slope of 2 percent read v = 2.8 ft/sec.

$$T_t = \frac{length}{velocity} = \frac{900 \text{ ft}}{2.8 \text{ ft/sec}} = 321 \text{ sec}$$

2. Compute the storm drain flow travel time.

Reach C to D. Use Manning's equation to compute pipefull velocity.

$$v = \frac{1.49}{n} \left(\frac{D}{4}\right)^{2/3} s^{1/2}$$

$$v = \frac{1.49}{0.015} \left(\frac{3}{4}\right)^{2/3} (0.015)^{1/2} = 10 \text{ ft/sec}$$

$$T_t = \frac{length}{velocity} = \frac{2,000 \text{ ft}}{10 \text{ ft/sec}} = 200 \text{ sec}$$

3. Compute the open channel flow travel time. Reach D to E. Use Manning's equation to compute bankfull velocity.

$$v = \frac{1.49}{n} r^{2/3} s^{1/2}$$

n = 0.019 for gunite channel

$$s = 0.005$$

$$v = \frac{1.49}{0.019} (1.78)^{2/3} (0.005)^{1/2} = 8.2 \text{ ft/sec}$$

$$T_t = \frac{\text{length}}{\text{velocity}} = \frac{3,000 \text{ ft}}{8.2 \text{ ft/sec}} = 366 \text{ sec}$$

4. Summary

Reach	Description of flow	Length (ft)	Velocity (ft/sec)	Travel time (sec)
A to B B to C C to D D to E	Overland Overland Storm drain Open channel	500 900 2,000 3,000	0.7 2.8 10.0 8.2	714 321 200 366
			Total	1,601

Thus

$$T_c = \frac{1,601 \text{ sec}}{(3,600 \text{ sec/hr})} = 0.44 \text{ hr}$$

Computation of Lag

The time between a brief heavy rain and the maximum runoff rate is called lag. Lag is a watershed parameter that is often related to time of concentration. It can be estimated from historical hydrographs or it can be estimated from specific watershed characteristics, such as watershed length, slope, and flow retardance. Watershed lag is used to compute peak discharges of the unit hydrograph in equation 4-1 in chapter 4. The same relationship is used in all SCS procedures outlined in chapters 4, 5, and 6.

Hydrograph method

In hydrograph analysis, lag is the time from the center of mass of excess rainfall to the peak rate of runoff. The time difference between the center of excess rainfall and the peak runoff can be determined by analyzing hydrographs from historical storm events. Based on studies of many storm events for a range of watershed conditions, the following empirical relationship between lag and time of concentration was derived:

$$L = 0.6 T_{c}$$
 (Eq. 3-1)

This relationship is for average natural conditions and for approximately uniform distribution of runoff over the watershed. A limited study of urban hydrographs shows that this relationship does not differ significantly in urbanized watersheds.

Modified curve number method

In small urban areas (less than 2,000 acres), the curve number method described in chapter 15 of NEH-4 can be used to estimate the time of concentration from watershed lag. The curve number method, originally developed from agricultural watershed data, was intended to span a broad set

of conditions ranging from steep to flat and from heavily forested to smooth. The equation for watershed lag is:

$$L = \frac{\ell^{0.8}(S+1)^{0.7}}{1,900 \text{ Y}^{0.5}}$$
 (Eq. 3-2)

where

L = lag in hours

l = hydraulic length of watershed in feet

 $S = \frac{1,000}{\text{CN'}} - 10 \text{ (where CN' is the retardance factor and is equivalent to the runoff curve number)}$

Y = average watershed land slope in percent.

Figure 3-3 shows the solution to equation 3-2 in graph form.

The CN' is a measure of the retardance of surface conditions on the rate at which runoff concentrates at some point in question. Therefore, $(S+1)^{0.7}$ is a retardance factor based on the surface condition of the watershed.

Data collected from small urban watersheds indicate that the retardance factor CN' generally does not adequately reflect the increased rate at which water can run off as a result of the installation of impervious areas, roads, gutters, and storm drains. Where an area is completely paved, such as a small parking lot, equation 3-2 adequately represents lag. For composite land use areas where streets, gutters, or sewers provide a more efficient flow pattern than lawns, forests, or other pervious areas, equation 3-2 overestimates lag.

Two factors cause the difference between historical measurements of lag and those computed by equation 3-2. The first is the extent to which a stream (usually the major watercourse in the watershed) has been changed over natural conditions either by straightening or by enlarging stream capacity and providing bank protection to allow higher flow velocities than under natural conditions. The second factor is the increased amount of impervious area, which permits water from overland flow sources and side channels to reach the main channel at a much faster rate than under natural conditions.

The weighted runoff curve number, if used as a retardance factor in equation 3-2, does not provide sufficiently for the decrease in lag caused by changes in the main channel and increases in impervious areas. Since urbanization can take place while the main channel is left in its natural state, separate adjustments to the lag equation were derived to account for the effect of each of the two factors on lag.

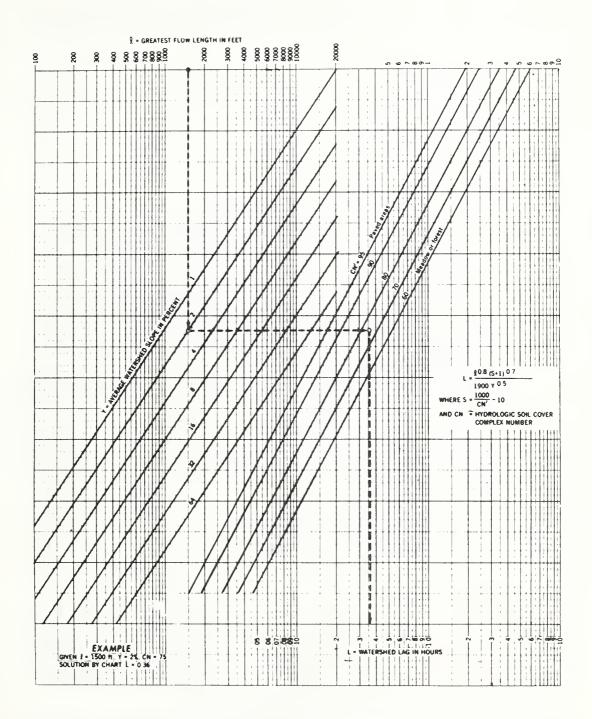


Figure 3-3.--Curve number method for estimating lag (L) for homogeneous watersheds under natural conditions up to 2,000 acres.

Figure 3-4 shows lag factors required to adjust equation 3-2 for watersheds where the natural condition of the main channel has been hydraulically improved. If the main channel has not been modified, the lag computed by equation 3-2 can be used. Not enough data are available, nor is equation 3-2 accurate enough, to distinguish between the types of channel modification made. The adjustment for channel improvement is made as follows. If 50 percent of the channel has been modified from its natural condition and the future-condition curve number is computed to be 80, then the lag computed by equation 3-2 (or read from figure 3-3) is multiplied by 0.7.

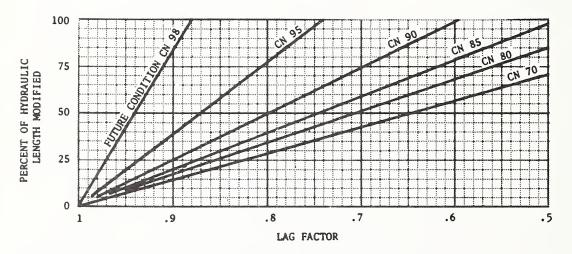


Figure 3-4.--Factors for adjusting lag from equation 3-2 or figure 3-3 when the main channel has been hydraulically improved.

Figure 3-5 shows lag factors for adjusting equation 3-2 if part of the watershed is impervious. If the future-condition curve number is 100 or the impervious area is zero, adjustments are not necessary. When a significant part of the watershed is impervious, time of concentration is decreased because the flow paths to the main channel are more efficient than under natural conditions.

Since figures 3-4 and 3-5 are used only with future-condition curve numbers, the lag factors cannot be used to directly compute the decrease in lag (or time of concentration) from present conditions. To determine the change in lag or time of concentration from present to future conditions, compute the present value and then, using the future-condition curve number, compute the future value.

When only peak discharges from an urban watershed are desired, lag does not have to be computed. Peak factors in figures 4-1 and 4-2, discussed in the next chapter, are used in the same manner as the lag factors when urban modifications to a watershed have occurred. If other procedures are used to compute peaks, but a time of concentration for future conditions is desired without making a detailed survey to determine the

individual overland components of flow, figures 3-4 and 3-5 can be used. Figures 3-4 and 3-5 are approximations at best and have the same limitations and uses as equation 3-2 and figure 3-3.

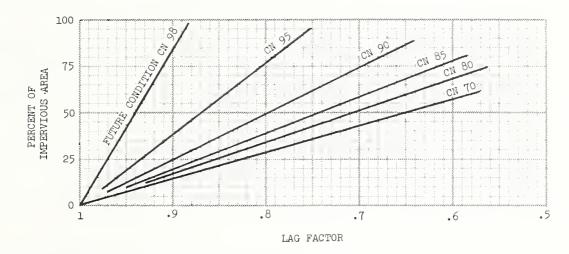


Figure 3-5.--Factors for adjusting lag from equation 3-2 or figure 3-3 when impervious areas occur in the watershed.

Example 3-2

A watershed of 1,000 acres has a present-condition curve number of 75, average watershed slope of 4 percent, and hydraulic length of 13,200 feet. Urban development is expected to modify about 70 percent of the hydraulic length, increase the impervious area to 40 percent, and increase the runoff curve number to 80. Compute the present- and future-condition time of concentration using the curve number method.

1. Present-condition lag from equation 3-2 or figure 3-3 with CN = 75.

$$L = \frac{(13,200)^{0.8}(3.33 + 1)^{0.7}}{1,900(4)^{0.5}} = 1.45 \text{ hr}$$

2. Present-condition time of concentration from equation 3-1.

$$T_c = 1.67(1.45) = 2.42 \text{ hr}$$

- 3. Future-condition lag.
 - a. Basic future-condition lag with CN = 80:

$$L = \frac{(13,200)^{0.8}(2.5+1)^{0.7}}{1.900(4)^{0.5}} = 1.25 \text{ hr}$$

b. Lag factor for modification of 70 percent of the hydraulic length from figure 3-4: hydraulic-length lag factor = 0.59

- c. Lag factor for 40 percent impervious area from figure 3-5:
 impervious-area lag factor = 0.76
- d. Future-condition lag = 1.25(0.59)(0.76) = 0.56 hr
- 4. Future-condition time of concentration from equation 3-1.

$$T_c = 1.67(.56) = 0.94 \text{ hr}$$

CHAPTER 4

PEAK DISCHARGES (APPENDIX D CHARTS)

Introduction

A quick and reliable method of computing peak discharges from agricultural drainage areas 1 to 2,000 acres in size is given in charts in appendix D. The charts were prepared for the solution of the general relationships, are based on type-II rainfall distribution, and are applicable to most agricultural areas of the United States. They do not apply to parts of the Pacific Coast states that do not have type-II rainfall distribution, as shown on the map in appendix D.

This chapter presents a method of adjusting peak discharges obtained from the charts in appendix D to reflect the increase in peak discharge due to urbanization. Additional methods for interpolating or adjusting peak discharges for conditions not found on the charts or not represented by the general equations in this chapter are given in appendix E.

Modification of Peak Discharge Due to Urbanization

Research in the area of urban hydrology is developing rapidly. Research to date has been sufficient to identify the parameters that are affected by urbanization and to derive limited empirical relationships between those parameters for both agricultural and urban watersheds. The time to peak for urban watersheds is affected by a decrease in lag or time of concentration as described in chapter 3.

Figures 4-1 and 4-2 give factors for adjusting peaks calculated from charts in appendix D based on the same parameters that affect watershed lag and time of concentration. The factors are applied to the peaks using future-condition runoff curve numbers as follows:

$$Q_{MOD} = Q \left[Factor_{IMP} \right] \left[Factor_{HIM} \right]$$
 (Eq. 4-1)

where

 Q_{MOD} = modified discharge due to urbanization

Q = discharge for future CN from appendix D charts

 ${f Factor}_{f IMP}$ = adjustment factor for percent impervious areas

Factor = adjustment factor for percent of hydraulic length HLM modified.

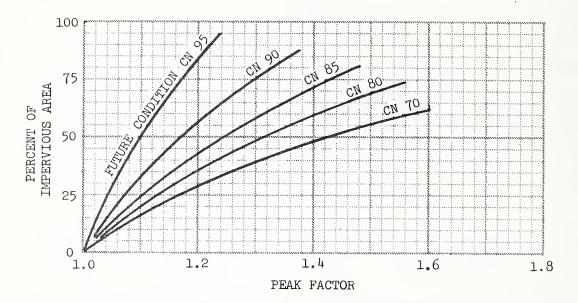


Figure 4-1.--Factors for adjusting peak discharges for a given future-condition runoff curve number based on the percentage of impervious area in the watershed.

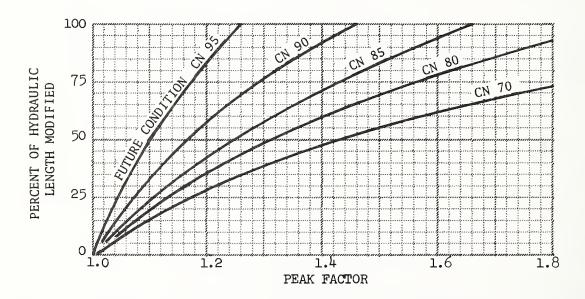


Figure 4-2.—Factors for adjusting peak discharges for a given future-condition runoff curve number based on the percentage of hydraulic length modified.

Example 4-1

A 300-acre watershed is to be developed. The runoff curve number for the proposed development is computed to be 80. Approximately 60 percent of the hydraulic length will be modified by the installation of street gutters and storm drains to the watershed outlet. Approximately 30 percent of the watershed will be impervious. The average watershed slope is estimated to be 4 percent. Compute the present-condition and anticipated future-condition peak discharge for a 50-year 24-hour storm event with 5 inches of rainfall. The present-condition runoff curve number is 75.

- 1. From table 2-1, the runoff for present condition is 2.45 inches and for future condition is 2.89 inches.
- 2. From the chart for moderate slope in appendix D (CN = 75), the present condition peak discharge is 120 cfs (cubic feet per second) per inch of runoff. The peak discharge is then 120 x 2.45 or 294 cfs.
- 3. From the chart for moderate slope in appendix D (CN = 80), the future-condition base discharge for CN = 80 is 133 cfs per inch of runoff. The base discharge is then 133 x 2.89 or 384 cfs.
- 4. From figure 4-1, with 30 percent impervious area and future runoff curve number of 80, read peak factor = 1.16.
- 5. From figure 4-2, with 60 percent of the hydraulic length modified and future-condition curve number of 80, read peak factor = 1.42.
- 6. The future-condition peak discharge is:

7. The effect of this proposed development is to increase the peak discharge from 294 to 633 cfs.



CHAPTER 5

TABULAR AND GRAPHICAL METHODS OF DETERMINING PEAK DISCHARGES

Introduction

This chapter presents tabular and graphical methods for computing peak discharges from urban areas using time of concentration $(\mathtt{T_c})$ and travel time $(\mathtt{T_t}).$ These methods are approximations of the more detailed hydrograph analysis, SCS-TR-20 "Computer Program for Project Formulation-- Hydrology," discussed in chapter 6.

The tabular method can be used to develop composite hydrographs at any point within a watershed by dividing the watershed into subareas and computing the time of concentration for each subarea and the travel time through each reach. The graphical method uses only the time of concentration and is applicable to a watershed where runoff characteristics are uniform and valley routing is not required. The factors affecting peak discharge calculations discussed in earlier chapters also apply in this chapter: 24-hour rainfall amount, a given rainfall distribution, hydrologic soil-cover complexes (runoff curve numbers), time of concentration, travel time, and drainage area.

The tabular method can be used for watersheds where hydrographs are needed to measure nonhomogeneous runoff, i.e., the watershed is divided into subareas. It is especially applicable for measuring the effects of changed land use in a part of a watershed. It can also be used to determine the effects of structures and combinations of structures, including channel modifications, at different locations in a watershed.

Tabular Method of Determining Peak Discharge

Table 5-3 shows the tabular discharge values for the type-II rainfall distribution used in this procedure. Tabular discharges, in terms of csm (cubic feet per second per square mile) per inch of runoff, are given for a range of T_c 's from 0.1 to 2 hours and T_t 's from 0 to 4 hours. For T_c 's up to 12 hours and T_t 's up to 30 hours, refer to TSC Technical Note ENG-UD-20. Values for other distributions are available. Table 5-3 was developed by computing hydrographs for 1 square mile of drainage area for a range of times of concentration and routing them through stream reaches with a range of travel times. A constant runoff curve number of 75 and a rainfall volume sufficient to yield 3 inches of runoff were used.

The tabular method should not be used when large changes in the curve number occur among subareas within a watershed and when runoff volumes are less than about 1.5 inches for curve numbers less than 60. For most watershed conditions, however, this procedure is adequate to determine the effects of urbanization on peak rates of discharge for subareas up to approximately 20 square miles in size.

The computed values of time of concentration (T_c) and travel time (T_t) can be rounded to the nearest value used in table 5-3 or, if more refinement is warranted, the discharges can be computed using the calculated T_c and T_t and interpolating between the T_c and T_t shown in the table. The information needed to calculate the peak discharge at a point in the watershed is:

- 1. The drainage area of each subarea
- 2. Tc for each subarea
- 3. Tt for each routing reach
- 4. The runoff curve number for each subarea
- 5. The 24-hour rainfall for a selected frequency
- 6. The runoff in inches for each subarea

Example 5-1

A developer plans to develop subareas 5, 6, and 7 shown in figure 5-1. The township planning board, before accepting his proposal, wants to know what effect the development would have on the 100-year discharge at the downstream end of subarea 7.

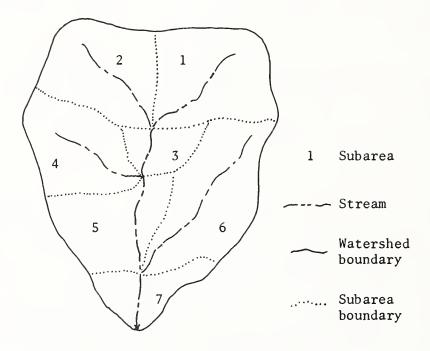


Figure 5-1.—Sample watershed for example 5-1.

1. Develop a table similar to table 5-1, which provides a summary of all the basic data required in the tabular hydrograph method.

Table 5-1.--Basic data used in example 5-1

Sub- area	Drain- age Area (mi ²)	Time of Concent (hrs	ration	Runo Curve		Runc (in	off1/	Travel	
		Pres.	Fut.	Pres.	Fut.	Pres.	Fut.	Pres.	Fut.
1 2 3 4 5 6 7	0.3 0.2 0.1 0.25 0.2 0.4 0.2	1.50 1.25 0.50 0.75 1.50 1.50	1.50 1.25 0.50 0.75 1.50 1.00	65 70 75 70 75 70 75	65 70 75 70 85 75 90	2.35 2.80 3.28 2.80 3.28 2.80 3.28	2.35 2.80 3.28 2.80 4.31 3.28 4.85	- 0.25 - 1.25 - 0.75	- 0.25 - 1.00 - 0.50

 $[\]frac{1}{F}$ From Table 2-1 for P = 6 inches.

- 2. Develop a flood routing summary table similar to table 5-2 for present and future conditions. The T_t for each subarea is the total travel time for that subarea through the watershed to the point of interest (end of subarea 7). The hydrograph coordinates under time-hours for each subarea are computed using the appropriate sheets from table 5-3 and equation $q = q_p$ (DA)(Q) where:
 - q = hydrograph coordinate discharge
 in cfs (cubic feet per second)

 - DA = drainage area in square miles
 - Q = runoff in inches

Using subarea 4 as an example, for $T_{\rm C}$ = 0.75 hours use sheet 3 of table 5-3. For $T_{\rm t}$ = 2.00 hours (the travel time through subareas 5 and 7) the routed peak of subarea 4 appears at the outlet of subarea 7 at 14.0 hours and is 251 csm/in. Therefore, the peak discharge is: q = 251(.25)(2.80) = 176 cfs.

3. In order to develop a composite hydrograph at the end of subarea 7, a method of summing the hydrographs from each subarea is used. This method provides a means of adjusting the timing of each hydrograph to allow for the travel time (T_t) from the individual watershed to the point in question. Table 5-2 shows how the present and future discharges are estimated. The effect of the urban development is to increase the 100-year peak discharge from 752 to 894 cfs. Methods for preventing an increase in discharge are discussed in chapter 7.

^{2/} Travel time through the reach for the corresponding subarea.

Table 5-2.--Discharge summary for example 5-1

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Drai T _c T _t ar		Drai	Drainage area	Rain- fall	Pr	Present cond Run-	conditions	13.0	13.2	13.5	14.0	14.5	15.0
15	Hr Hr Mi ² In	Mi 2	N 1	In			In	Cfs	Cfs	Ofs	Cfs	Of S	Cfs	Cfs
80	2.25 0.30 6 65	0.30 6 65	30 6 65	65			2.35	4	7	10	19	55	105	136
28	20 6 70	0.20 6 70	20 6 70	70			5.80	4	9	10	19	99	66	109
80 8 16 27 68 176 165 81 34 103 127 144 119 80 82 176 217 245 204 137 88 176 217 245 204 137 88 285 462 526 626 752 694 89 12.5 13.0 13.2 13.5 14.0 14.5 80 Cfs Cfs Cfs Cfs Cfs Cfs Cfs 114 81 176 193 184 131 85 8234 371 333 245 138 85 85 224 819 858 894 774 603	2.00 0.10 6 75	0.10 6 75	6 75	75		٠.	3.28	4	10	19	47	83	71	36
28 34 103 127 144 119 80 58 176 217 245 204 137 285 462 526 626 752 694 Tre conditions 1- 12.5 13.0 13.2 13.5 14.0 14.5 1- 12.5 13.0 27 53 107 137 25 6 17 27 53 107 137 26 6 17 28 54 102 114 28 42 70 97 73 38 20 6 17 28 54 102 114 21 58 103 188 174 106 21 334 371 333 245 138 85 28 234 371 333 245 138 85 28 234 371 333 245 138 85 28 234 371 858 894 774 603	2.00 0.25 6 70	0.25 6 70	9 20	70		•	5.80	₩	16	27	89	176	165	107
173 176 217 245 204 137 285 462 526 626 752 694 1re conditions 1- 12.5 13.0 13.2 13.5 14.0 14.5 hr	0.75 0.20 6 75	0.20 6 75	6 75	75		M	.28	34	103	127	144	119	80	24
285 462 526 626 752 694 Tre conditions 1- 12.5 13.0 13.2 13.5 14.0 14.5 hr	0.75 0.40 6 70	0.40 6 70	02 9	70		Ŕ	80	58	176	217	245	504	137	95
11- 12.5 13.0 13.2 13.5 14.0 14.5 hr	0.00 0.20 6 75	0.20 6 75	6 75	75		'n	28	173	144	116	%	53	37	28
conditions 12.5 13.0 13.2 13.5 14.0 14.5 hr hr hr hr hr Cfs Cfs Cfs Cfs Cfs 7 17 28 54 102 114 8 42 70 97 73 38 13 58 103 188 174 106 81 176 193 184 131 85 234 371 333 245 138 85 544 858 894 774 603	(Composite hydrograph at end of subarea 7)	at end of	at end of	of	subarea 7	a 7		285	762	526	979	752	469	565
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Future	Futi	Futi	Futi	Futi	Fut	_	nditions						
Cfs Ll37 Ll37 Ll4 Ll4 Ll6 Ll6 </td <td>Drainage Rain- Run T_c T_t area fall CN off</td> <td>Drainage Rain- area fall CN</td> <td>Rain- fall CN</td> <td>CN</td> <td></td> <td>Run</td> <td>- J</td> <td>12.5 hr</td> <td>13.0 hr</td> <td>13.2 hr</td> <td>13.5 hr</td> <td>14.0 hr</td> <td>14.5 hr</td> <td>15.0 hr</td>	Drainage Rain- Run T _c T _t area fall CN off	Drainage Rain- area fall CN	Rain- fall CN	CN		Run	- J	12.5 hr	13.0 hr	13.2 hr	13.5 hr	14.0 hr	14.5 hr	15.0 hr
7 17 27 53 107 137 137 137 138 42 70 97 73 38 138 174 106 81 176 193 184 131 85 234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	Hr Hr Mi ² In In	Mi 2 In	2 In				al	Cfs						
6 17 28 54 102 114 8 42 70 97 73 38 13 58 103 188 174 106 81 176 193 184 131 85 234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	1.75 0.30 6 65	0.30 6 65	6 65	65		2	35	7	17	27	53	107	137	122
8 42 70 97 73 38 13 58 103 188 174 106 81 176 193 184 131 85 234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	1.75 0.20 6 70	0.20 6 70	9 20	70		2.	<u>۾</u>	9	17	28	54	102	114	8
13 58 103 188 174 106 81 176 193 184 131 85 234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	1.50 0.10 6 75	0.10 6 75	6 75	75		m	58	₩	45	20	26	73	38	21
81 176 193 184 131 85 234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	1.50 0.25 6 70	0.25 6 70	9 20	70		3	80	13	58	103	188	174	106	09
234 371 333 245 138 85 315 138 104 73 49 38 664 819 858 894 774 603	1.50 0.50 0.20 6 85 4.	0.20 6 85	6 85	85		4.	31	81	176	193	184	131	85	59
315 138 104 73 49 38 664 819 858 894 774 603 ,	0.50 0.40 6 75	0.40 6 75	6 75	75		'n	28	234	371	333	245	138	85	62
664 819 858 894 774 603	0.00 0.20 6 90	0.20 6 90	06 9	06		4	.85	315	138	104	73	67	38	32
	(Composite hydrograph at end of subarea	hydrograph at end of subarea	at end of subarea	of subarea			7)	799	819	858	894	774	603	446

Discharges for these areas are computed from interpolated csm/in (cubic feet per second per square mile per inch of runoff) values from table 5-3.

Graphical Method of Determining Peak Discharge

The curve of T_c vs. peak discharge in csm per inch of runoff shown in figure 5-2 was developed from table 5-3 for zero T_t . It can be used for a watershed where the runoff can be represented by one curve number, i.e., the land use, soils, and cover are similar and are distributed uniformly throughout the watershed. This procedure is limited to peak discharge determination (hydrograph not required) for a watershed where valley routing is not required. The peak discharge can be calculated from figure 5-2 using T_c in hours, runoff in inches from a 24-hour rainfall, and drainage area in square miles.

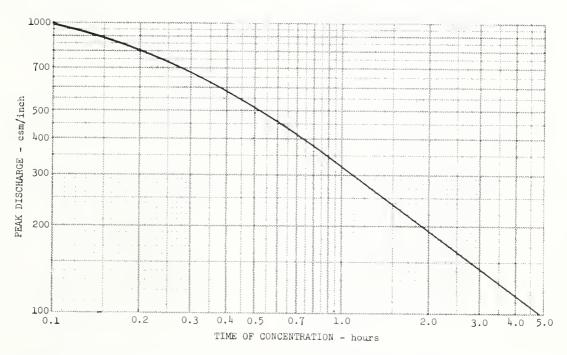


Figure 5-2.--Peak discharge in csm per inch of runoff versus time of concentration (T_C) for 24-hour, type-II storm distribution.

Example 5-2

A developer wishes to install a planned unit development in the uppermost part of a watershed. An ordinance in the township requires that a planned unit development not increase the 100-year-frequency flood flow at the downstream end of the development. The following basic data have been determined for present and future conditions:

Drainage area = 960 acres (1.5 mi²)

CN (present) = 80

CN (future) = 85

T_C (present) = 0.9 hr

T_C (future) = 0.6 hr

P₂₄ (24-hour, 100-year frequency rainfall) = 6.0 in.

The land use (present and future) and hydrologic soil groups are evenly distributed, i.e., runoff characteristics are uniform throughout the watershed. What will be the effect of the planned development on runoff and peak discharge at the 100-year frequency?

1. Present condition:

Q = 3.78 inches for CN = 80 and P_{24} = 6.0 inches (table 2-1). From figure 5-2 for T_c = 0.9 hours, q_p = 345 csm per inch of runoff.

$$q = q_p AQ = 345$$
 (3.78) = 1,956 cfs

2. Future condition:

Q = 4.31 inches for CN = 85 and P_{24} = 6.0 inches (table 2-1). From figure 5-2 for T_c = 0.6 hours, q_p = 460 csm per inch of runoff.

$$q = q_p AQ = 460 (1.5) 4.31 = 2,974 cfs$$

3. The proposed project will increase the total volume of runoff by 14 percent and decrease the time of concentration by 33 percent resulting in an increase in peak discharge of 52 percent (from 1,956 cfs to 2,974 cfs).

Methods described in chapter 7 can be used to determine the reservoir storage capacity required to reduce the peak from 2,974 to 1,956 cfs.

Table 5-3.--Tabular discharges for type-II storm distribution (csm/in)

2

Sheet 1 of

	20.0	17	14	15	15	16	16	17	16	8	21	23
	18.0	18	18	19	19	8	21	23	%	82	33	83
	16.0	24	24	%	27	82	33	38	84	1 /L	159	862
	15.0	क्ष	ଛ	35	35	38	1 47	89	150	321	30%	67
	14.5	33	35	38	142	1 47	8	142	343	239	29	18
	14.0	39	141	74	53	1 79	133	371	243	2	17	10
	13.5	84	55	63	8	121	360	777	141	17	07	9
	13.2	52	%	81	127	245	410	77	21	12	7	<u>د</u>
	12.9 13.0 13.2 13.5 14.0 14.5 15.0 16.0 18.0	65	15	011	506	389	236	34	16	10	9	4
ei	12.9	68	83	134	273	151	154	27	15	0	9	e
TIME OF CONCENTRATION = 0.1 hours	12.8	7	76	168	360	1,70	95	23	13	6 0	2	e
H = 0.	12.7 12.8	7/	117	222	452	127	26	8	12	7	4	α
TRATIO	12.6	85	137	310	515	328	38	18	7	-	4	~
OF CONCENTRATION = 0.1 h	12.5 12.6	111	169	£29	961	509	&	91	97	9	4	N
ME OF	12.4	121	236	543	392	115	25	14	6	2	٣	N
티	12.3	132	364	280	245	63	22	13	00	2	٣	٦
	12.2	152	945	1482	125	141	19	12	7	4	8	7
	12.1	233	989	288	9	R	17	11	_	4	2	٦
	12.0	177	929	133	742	28	16	97	9	4	2	7
	11.9	947	327	19	37	5ħ	14	0	2	٣	٦	0
	11.8	991	140	143	&	ส	13	60	2	٣	٦	0
	11.7	599	%	98	25	19	12	-	4	2	٦	0
	21 0.21 9.11 8.11 7.11 3.11 0.11	51	38	27	ୡ	15	10	9	4	2	٦	0
	11.0	24	8	15	12	0	9	٣	2	7	0	0
•	H	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	1 00.4

	9.0	14	15	15	15	16	17	18	19	8	22	5ή
	18.0 æ	18	18	19	19	8	22	24	92	82	34	41
	16.0	24	25	%	27	&	33	04	51	82	180	586
	15.0	83	31	33	36	39	20	75	174	316	300	53
	13.0 13.2 13.5 14.0 14.5 15.0	34	36	33	143	61	72	168	337	203	91	16
	14.0	01	143	64	26	69	159	363	500	04	16	6
	13.5	64	55	19	88	147	399	192	33	15	0	9
	13.2	99	70	95	157	539	330	26	19	ដ	۲	4
	13.0	68	83	133	263	1,27	176	82	15	0	9	m
ml	12.9	17	%	167	340	452	110	5₽	13	60	5	m
OF CONCENTRATION = 0.2 hours	12.8	75	114	219	422	1,26	19	21	12	80	2	٣
f = 0.2 b	12.7	85	138	962	181	347	143	18	7	-	-3	2
TRATIO		101	173	397	161	240	32	91	97	9	-3	2
OF CONCENT	12.5	121	235	164	604	143	%	15	0	9	m	8
TIDGE OF	12.4	138	341	545	284	79	23	13	00	2	٣	٦
	12.3	170	984	760	191	148	8	21	_	2	0	٦
	12.2	245	627	341	87	35	18	77	7	4	8	٦
	12.1	424	603	181	617	&	91	90	9	4	α	٦
	12.0	641	419	87	36	25	17	6	9	٣	2	7
	11.9	961	196	8	8	22	13	6 0	2	٣	7	0
	11.8	509	91	37	56	8	12	7	2	2	٦	0
	11.7	208	64	8	23	18	п	_	4	2	٦	0
	1.51 0.51 9.11 8.11 7.11 5.11 0.11	14	34	24	18	17	6	9	3	2	0	0
	11.0	23	18	14	7	6	2	٣	7	0	0	0
,	H	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	00.4

Table 5-3. -- Tabular discharges for type-II storm distribution (csm/in) -- Continued

	20.0	14	15	15	15	16	17	18	19	20	22	54
	18.0	18	18	19	8	20	22	57	27	೫	35	775
	16.0	24	25	%	28	9	34	141	54	76	56₹	281
	15.0	8	35	37	37	141	52	85	80	309	172	143
	14.5 15.0	37	37	141	712	17	81	198	328	169	38	15
	14.0	141	45	17	9	11	192	351	162	33	14	6
	13.5	51	59	47	105	182	382	151	28	17	0	8
	13.2	61	16	110	198	344	272	44	17	10	9	4
	13.0	17	97	168	319	756	132	25	1,4	0	\$	က
	12.9	77	911	216	389	415	82	21	12	80	2	m
hours	12.8	88	143	281	1443	358	52	19	11	7	4	ď
CONCENTRATION = 0.3 hours	12.7	102	179	363	1457	569	36	17	10	9	4	٥
MITTOR	12.6	124	234	L ተተ	413	176	28	15	6	9	က	N
OF CONCENTR	12.5	148	318	664	316	103	₹ 7	17	8	2	e	ч
6	12.4	181	1,28	614	203	8	21	12	80	~	e	7
TIME	12.3	251	530	378	11h	9	18	11	7	4	~	ч
	12.2	372	559	238	63	31	91	10	9	<i>=</i>	8	7
	12.1	535	191	124	141	56	15	6	9	٣	8	Т
	12.0	658	279	65	32	23	13	80	2	e	٦	0
	11.9	586	134	7,2	27	20	12	89	~	m	7	0
	11.8	324	19	34	5₽	18	11	7	<i>=</i>	N	٦	0
	11.7	141	143	ୡ	21	91	97	9	4	N	ч	0
	1.51 0.51 9.11 8.11 7.11 5.11 0.11	143	31	55	17	13	80	2	٣	٦	0	0
	11.0	21	17	13	01	80	2	Э	7	၁	0	0
•	ψ Ei	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	00.4

	20.0	17	15	15	16	91	17	18	19	21	25	77 77
	- 1	18	19	19	8	22	22	5ħ	27	3	36	77
	16.0	77	%	27	&	8	35	143	58	107	586	275
	15.0	ଚ୍ଚ	32	35	38	742	26	83	225	300	146	Ж
	14.5	35	38	715	74	55	93	225	31.7	140	35	17
	13.5 \$4.0 14.5 15.0 16.0 18.0	1,2	74	₹5	9	88	224	338	132	28	13	80
	13.5	53	† 9	₹8	128	520	365	911	25	13	80	۷
	13.2	99	87	137	241	368	220	37	16	97	9	٣
	13.0	8	119	211	356	103	102	23	13	80	5	က
	12.9	8	145	566	901	362	65	8	12	۲	4	8
	12.8	105	180	332	¥29	292	£4	17	п	-	4	8
Hours	12.7	127	228	705	101	208	ಜ	16	70	9	က	8
Time in	12.6	155	295	453	338	132	52	7,7	6	2	m	7
	12.5	190	380	7462	242	78	55	13	89	2	e	7
Hydrograph	12.4	74S	11911	395	150	64	19	11	7	4	5	Т
	12.3	331	508	586	85	34	17	07	9	4	8	7
	12.2	151	19 [†]	172	12	28	15	0	9	٣	8	٦
	ı	575	343	95	36	77	17	0	2	٣	7	0
	12.0	558	961	53	৪	12	12	80	2	٣	٦	0
	11.9	419	98	37	52	19	7	7	4	8	٦	0
	11.8	224	75	ጽ	55	17	ព	9	. ‡	N	Т	0
	11.7	103	38	56	19	15	ο,	9	٣	8	٦	0
	11.5	33	88	8	97	12	80	2	m	٦	0	0
	11.0 11.5 11.7 11.8 11.9 12.0 12.1	8	15	12	70	60	2	æ	Т	0	0	0
-	د ر انا	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	7.00

TIME OF CONCENTRATION = 0.4 hours

72 %

44

215

117

33

13

0 0

3.50

5 Sheet 3 of Table 5-3.--Tabular discharges for type-II storm distribution (csm/in)--Continued

	20.0	15	15	15	16	16	17	18	61	23	23	25		20.0	15	15	16	16	16	17	19	8	22
	18.0	18	19	19	8	21	23	25	58	æ	38	25		18.0	19	19	8	21	21	23	%	&	34
	16.0	25	%	27	&	೫	36	911	Z	126	227	217		16.0	%	27	&	ਸ਼	33	04	26	91	153
	- 1	31	33	36	33	11	9	120	500	239	155	63		15.0	33	%	04	54	53	85	153	236	225
	14.5 15.0	98	33	77	8	61	115	216	253	154	26	19		14.5	39	††	52	63	81	152	235	218	113
	14.0	143	64	29	11	109	224	271	150	84	16	6		14.0	51	62	42	107	149	248	251	107	33
	13.5	57	73	103	157	231	295	143	33	15	80	2		13.5	92	103	147	208	7 92	569	97	28	12
	13.2	75	107	169	255	317	214	58	18	10	9	4		13.2	107	156	526	286	762	147	33	15	60
	13.0	46	150	241	325	327	129	8	77	80	5	٣		13.0	142	212	288	311	256	83	23	#	-1
	12.9	109	182	285	348	307	92	23	12	7	5	٣		12.9	165	247	314	303	220	8	18	10	9
hours	12.8	130	221	359	35#	56h	63	19	11	7	-3	Ø	hours	12.8	195	285	329	278	177	77	16	6	9
f = 0.5 hours	12.7	158	270	366	335	210	143	16	10	9	. #	a	= 0.75	Hours 12.7	232	321	327	239	134	31	1,4	80	2
		194	326	385	292	153	31	1,4	6	2	٣	N	TION	lme in 12.6	276	348	305	192	95	23	12	7	~
OF CONCENTRATION Bydrograph Time	12.5	242	383	374	529	103	5₫	13	80	2	٣	٦	TIME OF CONCENTRATION	12.4 12.5 12.	325	355	263	142	9	19	11	-	4
OF CO	12.4	309	ħ5ħ	327	162	8	8	12	7	₽	Ø	٦	01.00	12.4	369	336	208	98	77	16	10	9	4
TDG	12.3	395	425	252	103	7.3	17	11	-	4	Ø	٦		12.3	388	291	150	9	೫	7,7	6	2	٣
	12.2	714	372	169	63	31	15	9	9	#	~	7		12.2	375	227	100	143	5₽	13	80	2	9
	12.1	961	277	101	1,1	25	17	6	2	٣	N	7		12.1	329	158	63	ଛ	8	12	7	#	Ø
	12.0	433	172	58	8	21	12	80	2	٣	Т	٦		12.0	248	100	141	5ħ	17	7	7	4	Ø
	11.9	301	η6	38	25	19	7	۲-	#	2	٦	0		11.9	163	61	&	8	15	97	9	4	N
	11.0 11.5 11.7 11.8	166	52	8	22	17	97	9	.#	a	7	0		11.8	98	33	77	18	1,4	6	2	٣	8
	11.7	8	37	25	19	15	6	9	٣	0	7	0		11.7	57	8	21	91	13	6 0	~	٣	٦
	11.5	36	56	8	15	ដ	80	2	m	7	0	0		11.5	59	21	16	13	10	9	4	8	٦
	11.0	18	15	12	6	7	2	m	1	0	0	0		11.0	15	12	10	00	9	4	7	7	0
	H H	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	00.4		H	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00

2

ti c

Sheet 4 of Table 5-3.--Tabular discharges for type-II storm distribution (csm/in)--Continued

	20.0	15	16	16	16	17	18	19	21	22	52	28		20.0	16	16	16	17	17	18	8	21	23	56	8
	18.0	19	50	21	21	22	5β	27	31	33	52	7.7		18.0	8	21	72	22	23	56	8	35	145	62	91
	16.0	27	&	31	33	37	84	2	114	172	202	195		16.0	&	೫	34	38	143	58	88	132	196	190	184
	15.0	36	141	147	55	%	110	178	219	210	88	33		15.0	1,2	84	26	29	83	131	189	201	143	89	56
	14.5	946	54	65	82	107	181	230	178	83	&	12		14.5	26	29	82	103	130	195	212	143	† 9	23	07
	14.0	19	81	105	140	183	544	182	7.1	25	7	9		14.0	81	102	130	165	200	223	143	58	ଥ	0	5
	13.5	102	139	187	236	262	185	69	23	10	9	4		13.5	128	167	503	242	236	142	52	17	6	2	ю
	13.2	146	200	254	273	240	103	83	77	٢	-3	Ø		13.2	177	223	251	235	190	92	24	ខ្ម	9	4	α
	13.0	188	252	283	256	187	58	18	10	9	m	8		13.0	219	253	247	202	139	7	15	80	٧.	٣	ч
	12.9 1	217	275	284	233	154	143	15	0	2	٣	8		12.9 1	241	259	235	177	113	33	13	7	-21	8	ч
urs	12.8 1	247	293	274	202	121	31	13	80	5	٣	٦	ours	12.8 1	256	259	216	149	88	25	п	7	4	Ø	н
= 1.0 hours	12.7	277	539	251	165	8	77	11	٢	4	8	-1	= 1.25 hours	12.7 1	267	549	190	120	98	20	97	9	٣	8	ч
OF CONCENTRATION = 1.0 h. Hours	12.6	301	293	219	128	65	19	01	9	4	8	7		12.6 1	271	231	160	93	64	16	6	2	٣	0	ч
SOP TE	12.5 1	316	272	178	76	917	91	0	9	٣	8	٦	CONCENTRATION	12.5 1	264	205	128	69	36	14	80	2	٣	ч	7
OF CONCENTRATION	12.4 1	313	238 ;	136	29	33	14	80	2	٣	8	г	COMC	2.4 1	549	172	98	8	27	12	-	7	8	ч	0
TIME O	12.3	301	193	8	94	25	12	ω	5	٣	ч	ч	TIME OF	12.3 12	219	137	72	36	21	10	9	#	8	7	0
	Q.	258	146	89	33	8	11	7	. 	8	н	0		12.2 15	187	103	17	27	17	6	9	٣	C)	ч	0
	2.1 12	211		94	25	17	10	9	-77	8	н	0		- 1	147		37	23	14	ω	2	٣	N	-	0
	12.0 12.	155 2	68	ಜ್ಞ		15		9	٣	8	ч	.0		12.0 12.1	107	53	27	17	13	80	2	٣	н	-	0
	11.9	107	54	54	17	13	80	2	٣	ч	٦	0		11.9 12	79	98	21	15	7	_	-31	8	п	0	0
	п.8	1 99	R	ଛ	15	21	_	4	6	7	0	0		11.8	51	27	17	13	97	9	4	8	н	0	0
	11.7	45	24	17	13	7	_	4	2	٦	0	0		11.7	37	21	15	27	6	9	3	2	-	0	0
	п.5 п	54	18	14	п	0	2	e	8	ч	0	0			23	15	27	Φ.	7	2	۳	٦	٦	0	0
	11.0 11	13	10	80	_	2	e	2	٦	0	0	0		11.0 11.5	11	6	-	9	4	٣	п	7	0	0	0
	7											_	•	77											_
	E P	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	7.00		H.	0	0.25	0.50	0.75	1.00	1.58	2.00	2.5	3.00	3.50	ه. ۵۰ ا

Sheet 5 of 5 Table 5-3.--Tabular discharges for type-II storm distribution (csm/in)--Continued

	0	16	16	17	17	18	19	20	22	25	28	34		0	17	17	18	18	19	21	23	56	30	35	143
	20.0													20.0											
	18.0	8	23	22	23	5	28	33	04	53	1 ₄	105		18.0	23	5φ	58	27	8	34	1,2	53	17	95	155
	16.0	88	36	8	77	20	70	102	147	184	178	174		16.0	14	917	52	59	68	93	127	166	162	158	8
	15.0	50	58	99	82	100	149	197	190	115	53	22		15.0	89	79	92	109	127	163	170	132	16	35	14
	14.5	68	82	66	122	150	204	184	114	617	18	80		14.5	93	109	129	149	167	175	133	77	35	13	9
	14.0	66	122	152	182	214	191	112	45	16	80	7		14.0	129	153	172	183	180	135	17	23	12	9	e
	13.5	153	188	214	219	198	109	01	14	7	7	2		13.5	176	189	186	991	136	68	56	11	2	٣	8
	13.2	201	224	224	194	148	58	19	6	2	٣	8		13.2	190	185	162	129	95	37	14	7	7	8	٦
	13.0	225	230	20 lt	157	105	34	13	7	4	8	٦		13.0	192	168	135	76	ή9	23	10	2	٣	8	7
	12.9	236	225	188	134	48	%	ជ	9	4	2	ч		12.9	184	157	119	82	52	18	80	2	٣	٦	٦
urs	12.8	236	215	167	111	99	12	20	9	٣	8	٦	ours	12.8	175	143	103	29	775	15	7	4	N	٦	٦
1.5 hours	12.7 1	235	199	143	89	22	17	80	2	٣	2	ч	2.0 hours	1n hours	165	126	%	55	33	12	9	7	2	٦	0
" .	12.6 1	227	178	118	69	38	7,7	80	2	m	٦	ч			152	108	17	143	56	10	9	٣	8	٦	0
		209	153	η6	52	83	12	7	4	8	7	0	CONCENTRATION	rapn 11 12.5	133	16	57	37	20	6	2	٣	2	г	0
CONIC	hydrograph 12.4 12.5	192	125	72	83	22	10	9	7	8	٦	0	F CONC	ito	114	75	517	56	16	80	2	٣	٦	ч	0
TIME OF	m	164	8	54	83	17	6	2	٣	8	ч	0	TIME OF	м	95	19	35	77	13	7	4	8	٦	٦	0
ы	12.2 12.	133 1	92	01	22	14	80	2	٣	ч	٦	0	C-1	12.2 12.	80	Įτ	27	16	11	9	7	8	٦	0	0
	- 1	105 1		8			7	7	۳	-	ч	0			19	37				2	٣	8	ч	0	0
	0 12.1	81 10	41	22	. 51	 	7	7	2	7	0	0		0 12.1) 61	28	17	11	8		3		7	0	0
	9 12.0						9	4	8	ч	0	0		9 12.0					7	t	3	_	п	0	0
	11.9	57	3	18	. 13	10								11.9	38	. 55	. 13	10							
	11.8	1,2	22	15	11	0	2	m	8	ת	0	0		11.8	8	17	77	80	7	4	8	ר	0	0	0
	11.7	ਲ	17	13	ដ	80	2	М	7	ч	0	0		11.7	22	13	10	80	9	3	2	7	0	0	0
	2.5	18	13	97	80	9	4	8	٦	0	0	0		11.5	14	10	00	9	2	m	٦	٦	0	0	0
	11.0	10	80	9	2	4	N	ч	0	0	0	0		11.0	7	9	2	4	٣	ז	п	0	0	0	0
	4	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	00.4		t ₁	0	0.25	0.50	0.75	1.00	1.50	2.00	2.50	3.00	3.50	00.4



CHAPTER 6

SCS-TR-20 METHOD OF DETERMINING PEAK FLOW

Introduction

This chapter presents a general description of the "Computer Program for Project Formulation--Hydrology" distributed by SCS through Technical Release No. 20 (SCS-TR-20). A detailed description of the use of the computer program is beyond the scope of this chapter. However, an awareness of its potential use in urban hydrologic studies is important. The program was developed primarily as an evaluation tool for watershed project planning. It provides a procedure for analyzing alternative systems of structural measures. SCS-TR-20 describes in detail the preparation of input data.

Areas of Application

Under most conditions seen in the field the hydrologic effects of urbanizing a watershed can be determined by using methods described in chapters 4 and 5. However, consideration should be given to using the computer program when:

- 1. Watersheds are larger than 2,000 acres
- 2. There are many subareas with different runoff characteristics
- 3. Large swamp areas or reservoirs are present
- 4. Historical storm events need to be analyzed

General Description

The program was developed with strict adherence to a policy of having it (1) as flexible as possible in the use of input data; (2) provide for the maximum use of engineering judgment; (3) engineer-oriented rather than machine-oriented; and (4) described in the FORTRAN system to provide for ease in future extensions, alterations, and recompilation for other computer models.

The program computes surface runoff resulting from any synthetic or natural rainstorm. It takes into account conditions affecting runoff (CN, $T_{\rm c}$, etc.), develops a hydrograph, and routes the hydrograph through stream channels and reservoirs. The computer can combine the routed hydrograph with those from other tributaries and print out the total composite hydrograph, peak discharges, time of occurrence, and the water surface elevation at each desired cross section or structure. Watersheds are analyzed under present conditions and with various combinations of land treatment, floodwater-retarding structures, and channel improvement.

Capabilities and Limitations

In general, in any one continuous operation, the computer program can:

1. Route through as many as 60 structures and an unlimited number of variations for each structure, including that of having no structure.

- 2. Route through as many as 120 stream reaches and an unlimited number of channel modifications for each reach.
- 3. Compute up to 300 ordinates of a hydrograph and print out the discharge and elevation for each.
- 4. Make an unlimited number of routings through a watershed, including variations in rainfall amounts, rainfall duration, and antecedent moisture condition.
- 5. Develop and route the runoff for nine different storm distributions and for an unlimited number of depths and durations for any storm distribution.
- 6. Combine hydrographs from an unlimited number of tributaries and reaches.

Hydrologic and hydraulic parameters that are affected by urbanization can be varied and used as input to the computer program and the effects can be analyzed.

If it is desired to use the computer program for urban hydrology studies, a copy of SCS-TR-20 can be obtained from any SCS state office. A copy of the source program can be obtained by SCS personnel through the SCS Management Division, Washington, D.C.; other users can obtain a copy through the National Technical Information Service:

National Technical Information Service U.S. Department of Commerce P.O. Box 1553
Springfield, Virginia 22151

CHAPTER 7

METHODS FOR CONTROLLING PEAK DISCHARGES FROM URBANIZING AREAS

Introduction

As rural areas urbanize, the increase in peak discharges due to more efficient conveyance paths and increased impervious areas can have a significant adverse impact on downstream areas. There is a growing interest on the part of planners, developers, and the public in protecting downstream areas from induced flood damages that may accompany increased peaks and stages. Planning authorities are proposing local ordinances that restrict the type of development permitted and the impact development can have on the watershed. One of the primary controls being imposed is that future-condition discharges cannot exceed present-condition discharges at some predetermined frequency of occurrence at specified points on the channel.

Earlier chapters discussed methods of determining changes in peak discharges. This chapter discusses types of measures or construction techniques that can be used to control peak discharges from urbanizing areas through planned runoff delay and increased infiltration and presents a procedure for estimating the amount of storage required to maintain peaks at some predetermined level.

Methods of Reducing or Delaying Urban Runoff

Methods to control runoff in urbanizing areas reduce either the volume or the rate of runoff. The effectiveness of any control method depends on the available storage, the outflow rate, and the inflow rate. Because a great variety of methods can be used to control peak flows, each method proposed should be evaluated for its effectiveness in the given area.

Table 7-1 lists measures for reducing and delaying urban storm runoff. Table 7-2 lists some advantages and disadvantages of each measure. Both tables were adapted from tables prepared at Pennsylvania State University under the direction of Gert Aron, associate professor of civil engineering. Effective measures for reducing peak rates of runoff are, of course, not limited to those listed in table 7-1.

Effects of Reducing or Delaying Urban Runoff

The direct reduction of peak flows and volume of runoff through installation of these measures is very difficult to determine. Measures that increase infiltration also reduce runoff. Therefore the runoff curve number will be lower than it would be without the measures. Measures that delay runoff also increase the time of concentration. The degree of change in curve number or time of concentration over the watershed depends on how extensively each measure is applied.

Table 7-1.--Measures for reducing and delaying urban storm runoff

Area	Reducing runoff	Delaying runoff
Large flat roof	 Cistern storage Rooftop gardens Pool storage or fountain storage Sod roof cover 	 Ponding on roof by constricted down-spouts Increasing roof roughness Rippled roof Gravelled roof
Parking lots	1. Porous pavement a. Gravel parking lots b. Porous or punctured asphalt 2. Concrete vaults and cisterns beneath parking lots in high value areas 3. Vegetated ponding areas around parking lots 4. Gravel trenches	 Grassy strips on parking lots Grassed waterways draining parking lot Ponding and detention measures for impervious areas a. Rippled pavement Depressions c. Basins
Residential	1. Cisterns for indi- vidual homes or groups of homes 2. Gravel driveways (porous) 3. Contoured landscape 4. Ground-water recharge a. Perforated pipe b. Gravel (sand) c. Trench d. Porous pipe e. Dry wells 5. Vegetated depressions	 Reservoir or detention basin Planting a high delaying grass (high roughness) Gravel driveways Grassy gutters or channels Increased length of travel of runoff by means of gutters, diversions, etc.
General	 Gravel alleys Porous sidewalks Mulched planters 	1. Gravel alleys

Table 7-2.--Advantages and disadvantages of measures for reducing and delaying runoff

	Measure	Advantages	Disadvantages
A.	Cisterns and covered ponds	 Water may be used for: Fire protection Watering lawns Industrial processe Cooling purposes Reduce runoff while only occupying small area Land or space above cistern may be used for other purposes 	 Cost required may be restrictive if
В.	Rooftop gardens	 Esthetically pleasing Runoff reduction Reduce noise levels Wildlife enhancement 	 Higher structural loadings on roof and building Expensive to install and maintain
C.	Surface pond storage (usually resi- dential areas)	1. Controls large drainag areas with low releas 2. Esthetically pleasing 3. Possible recreation benefits a. Boating b. Ice skating c. Fishing d. Swimming 4. Aquatic life habitat 5. Increases land value of adjoining property	ge 1. Require large areas se 2. Possible pollution from storm water and siltation 3. Possible mosquito breeding areas 4. May have adverse algal blooms as a result of eutro- phication
D.	Ponding on roof by constricted downspouts	 Runoff delay Cooling effect for building Water on roof Circulation throug Roof ponding provides fire protection for building (roof water may be tapped in case of fire) 	1. Higher structural loadings 2. Clogging of constricted inlet requiring maintenance 3. Freezing during winter (expansion) 4. Waves and wave loading 5. Leakage of roof water into building (water damage)

Table 7-2.--Advantages and disadvantages of measures for reducing and delaying runoff--Continued

Measure	Advantages	Disadvantages
E. Increased roof roughness a. Rippled roof b. Gravel on roof	1. Runoff delay and some reduction (detention in ripples or gravel)	1. Somewhat higher struc- tural loadings
F. Porous pavement (parking lots and alleys) a. Gravel park- ing lot b. Holes in im- pervious pavements (1/4 in. φ) filled with sand	1. Runoff reduction (a and b) 2. Potential ground- water recharge (a and b) 3. Gravel pavements may be cheaper than asphalt or concrete (a)	 Clogging of holes or gravel pores (a and b) Compaction of earth below pavement or gravel decreases perme ability of soil (a and b) Ground-water pollution from salt in winter (a and b) Frost heaving for impervious pavement with holes (b) Difficult to maintain Grass or weeds could grow in porous pavement (a and b)
G. Grassed channels and vegetated strips	1. Runoff delay 2. Some runoff reduction (infiltration recharge) 3. Esthetically pleasing a. Flowers b. Trees	 Sacrifice some land area for vegetated strips Grassed areas must be mowed or cut periodically (maintenance costs)
H. Ponding and detention measures on impervious pavement a. Rippled pavement b. Basins c. Constricted inlets	1. Runoff delay (a, b, and c) 2. Runoff reduction (a and b)	 Somewhat restricted movement of vehicle (a) Interferes with normal use (b and c) Damage to rippled pavement during snow removal (a) Depressions collect dirt and debris (a, b, and c)

Table 7-2.--Advantages and disadvantages of measures for reducing and delaying runoff--Continued

_	Measure		Advantages		Disadvantages
I.	Reservoir or detention basin	2.	Runoff delay Recreation benefits a. Ice skating b. Baseball, football, etc., if land is provided Esthetically pleasing Could control large drainage areas with low release	2.	Considerable amount of land is necessary Maintenance costs a. Mowing grass b. Herbicides c. Cleaning periodically (silt removal) Mosquito breeding area Siltation in basin
J.	Converted septic tank for storage and ground- water re- charge	2.	Low installation costs Runoff reduction (infiltration and storage) Water may be used for: a. Fire protection b. Watering lawns and gardens c. Ground-water re- charge	2.	Requires periodic main- tenance (silt removal) Possible health hazard Sometimes requires a pump for emptying after storm
K.	Ground-water recharge a. Perforated pipe or hose b. French drain c. Porous pipe d. Dry well	2.	Runoff reduction (infiltration) Ground-water re- charge with relatively clean water May supply water to garden or dry areas Little evaporation loss		Clogging of pores or perforated pipe Initial expense of installation (materials)
L.	High delay grass (high rough-ness)		Runoff delay Increased infil- tration	1.	More difficult to mow
М.	Routing flow over lawn		Runoff delay Increased infil- tration		Possible erosion or scour Standing water on lawn in depressions

Preliminary studies at Pennsylvania State University¹ have shown that for one particular situation analyzed (a 200-acre urban watershed) the potential peak flow was reduced by about 8 percent by gravel minidikes on slightly slanted roofs. Also, installing grass-protected infiltration trenches to control runoff from parking lots reduced the flood peak by about 5 percent. Various possible combinations of methods should be evaluated on their particular merit for the watershed under consideration.

Methods for Estimating the Effect of Storage

When a structure such as a retarding dam or holding pond is installed, hydraulic routing procedures can be used to determine the effect on peak discharges. The SCS-TR-20 program referred to in chapter 6 provides an accurate method for analyzing this situation. A less accurate method has been developed for quickly analyzing effects of storage reservoirs on peak discharges. The method is based on average storage and routing effects for many structures. The storage indication method of routing was used. Figure 7-1 relates the volume of inflow to volume of required storage for a range of peak release rates. Figure 7-2 relates the peak outflow-inflow ratio to the storage-runoff volume ratio where a single-stage pipe spillway or weir is used. Emergency spillway flow is not considered.

The accuracy of the curves in figures 7-1 and 7-2 depends on the relationship between the storage available, the inflow volume, and the shape of the inflow hydrograph. When only a small volume is available for temporary storage, the shape of the outflow hydrograph is very sensitive to the rate of rise of the inflow hydrograph. Conversely, when a large volume is available for storage, the shape of the inflow hydrograph has little effect on the outflow hydrograph which, in this case, is controlled by the hydraulics of the structural system. Therefore, parameters such as runoff curve number and time of concentration, which affect the rate of rise of a hydrograph, become significant parameters in analyzing the effects of structures when the peak outflow rate approaches the peak inflow rate.

In figure 7-1 the peak inflow rate is not a factor in determining storage requirements. It can be seen that the ratio of volume of storage $(\mathtt{V}_{\mathtt{S}})$ to volume of runoff $(\mathtt{V}_{\mathtt{r}})$ is relatively high. Therefore, inflow peak is not a significant parameter. Figure 7-1 is usually accurate within 5 percent for release rates under 100 csm (cubic feet per second per square mile) and within 10 percent for release rates over 100 csm.

Figure 7-2 relates the ratio of peaks to volumes. For this case the parameters affecting the shape of the hydrograph are important. In situations where runoff curve numbers are less than 65 in combination with short $T_{\rm c}$ values, $V_{\rm s}/V_{\rm r}$ values read from the curve will be up to 25 percent too high. Runoff curve numbers over 85 with long $T_{\rm c}$ values cause $V_{\rm s}/V_{\rm r}$ values to be up to 25 percent too low.

¹Studies of flood peak abatement in urban storm runoff conducted by Gert Aron, assoc. prof. civil eng., Pennsylvania State Univ.

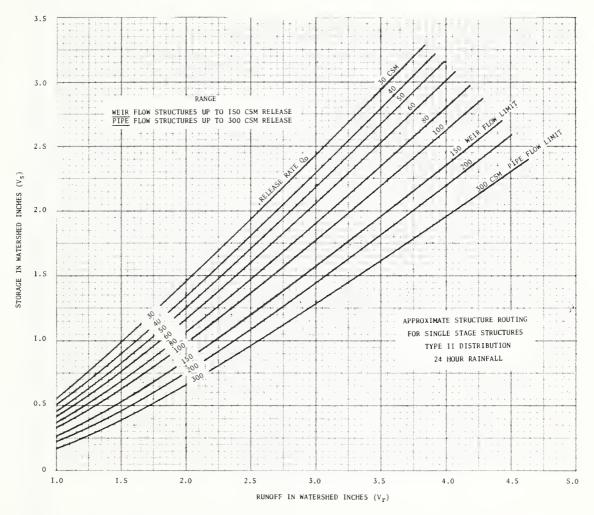


Figure 7-1.--Approximate single-stage structure routing for weir flow structures up to 150 csm release rate and pipe flow structures up to 300 csm release rate.

Figure 7-1 applies to pipe drop inlets of 0 to 300 csm release rate and weir flow structures of 0 to 150 csm release rate. Figure 7-2 applies to pipe drop inlets of over 300 csm release rate and weir flow structures of over 150 csm release rate.

Extrapolation for points falling outside the limits of the curves could introduce a significant error. The steps necessary to use the procedure described in this chapter are:

- 1. Determine the basic watershed parameters (DA, CN, $T_{\rm c}$, etc.).
- 2. Determine the volume of runoff and peak rate of flow from the water-shed.

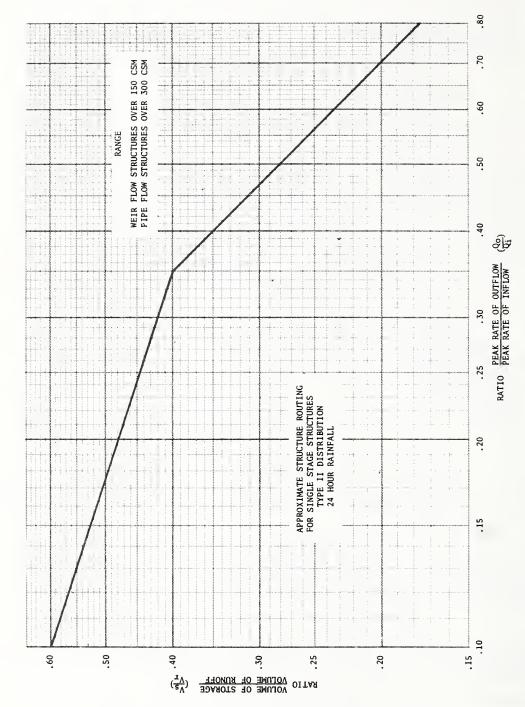


Figure 7-2. -- Approximate single-stage structure routing for weir flow structures over 150 csm release rate and pipe flow structures over 300 csm release rate.

- 3. Set the desired rate of outflow from the structure.
- 4. Determine the required volume of storage from the appropriate figure, 7-1 or 7-2.
- 5. Proportion the storage structure so that the design outflow rate and maximum storage occur at the same stage.

Note that in steps 3 and 4, the storage volume could be set and the resulting rate of outflow determined from figures 7-1 and 7-2. For structures with drainage areas over 2,000 acres and for events of less than 2-year frequency, the SCS-TR-20 program discussed in chapter 6 should be used. The following examples show how figures 7-1 and 7-2 are used.

Example 7-1

A developer is attempting to secure a permit to install a 4.2-acre-ft detention reservoir at the outlet of a proposed 75-acre development for storm water management. Based on procedures described in chapter 4, the present peak discharge of the design storm is 180 cfs (cubic feet per second), the future runoff is 3.4 inches, and the future peak discharge is 360 cfs. Using the stage-discharge and stage-storage curves shown in figure 7-3, determine whether the proposed structure will reduce the future-condition peak discharge to 180 cfs.

For this example, 180 cfs is the desired outflow Q_0 and 360 cfs is the future-condition discharge into the reservoir Q_1 . Inflow runoff V_r is 3.4 inches.

1. Select the proper figure to use in the shortcut routing method.

$$Q_{O}$$
 = 180 cfs (present peak)
= 180 cfs (640 acres/mi²) = 1,536 csm
75 acres

Since Q_O is greater than 300 csm, use figure 7-2.

2. Compute $\frac{\mathbb{Q}_0}{\mathbb{Q}_1}$ (must be in same units).

$$\frac{Q_0}{Q_1} = \frac{180 \text{ cfs}}{360 \text{ cfs}} = 0.5$$

3. Determine $V_{\rm S}$ (volume storage).

With
$$\frac{Q_o}{Q_i}$$
 = 0.5, enter figure 7-2 and find $\frac{V_S}{V_r}$ = 0.28.

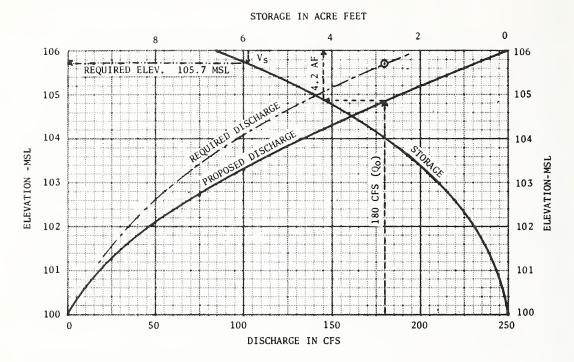


Figure 7-3.--Stage-discharge and stage-storage relationship for structure A in example 7-1.

Since $V_r = 3.4$ inches, then

$$V_S = 0.28 (3.4) = 0.95 \text{ in}$$

= $\frac{0.95 \text{ in } (75 \text{ acres})}{12 \text{ in/ft}} = 5.9 \text{ acre-ft}$

4. Determine available storage.

From figure 7-3 the elevation of the crest of the emergency spillway must be 104.8 msl (mean sea level) to discharge 180 cfs. At this elevation the available storage is 4.2 acre-ft.

5. Evaluate proposed structure.

The required storage of 5.9 acre-ft is greater than the 4.2 acre-ft provided by the proposed structure. The structure should be redesigned to raise the crest of the emergency spillway to 105.7 msl (5.9 acre-ft), and the principal spillway should be modified so that it will discharge 180 cfs at 105.7 msl.

Example 7-2

Based on the conditions in example 5-1, determine the release rate and the storage required at structure 6A located near the outlet of subarea 6 to maintain the peak discharge at the existing rate at the outlet of

the watershed. Refer to figure 5-1 and tables 5-1 and 5-2. Assume a pipe drop inlet spillway for the structure.

1. From table 5-2, subtract the future-condition flow contribution by subarea 6 from the future composite hydrograph as follows:

Hydrograph	Time (hours)								
location	13.0	13.2	13.5	14.0	14.5				
Composite discharge (cfs)	819	858	894	774	603				
Subarea 6 discharge (cfs)	371	333	24 5	138	85				
Composite discharge minus subarea 6 (cfs)	448	525	649	636	518				

Note that the partial composite hydrograph peak is 649 cfs at the outlet of the watershed.

2. Since the present-condition maximum peak discharge at the outlet is 752 cfs, the release rate of structure 6A cannot exceed 752 cfs minus the peak of the partial composite hydrograph. Therefore,

maximum release rate = 752 - 649 = 103 cfs

3. Determine peak outflow (Q_O) in csm from proposed structure 6A.

$$Q_0 = \frac{103 \text{ cfs}}{0.4 \text{ mi}^2} = 258 \text{ csm}$$

- 4. A pipe drop inlet with 258 csm maximum release rate will be routed. Use figure 7-1 since the release rate is less than 300 csm.
- 5. Determine required storage (V_S). With Q_O = 258 csm, V_r = 3.28 in. (future-condition runoff for subarea 6). Enter figure 7-1 and find

$$V_S = 1.55 \text{ in}$$

$$= \frac{1.55 \text{ in } (640 \text{ acres/mi}^2)(0.4 \text{ mi}^2)}{12 \text{ in/ft}} = 33.1 \text{ acre-ft}$$

Therefore, the storage required to maintain the peak discharge at the present rate at the watershed outlet is 1.55 inches or 33.1 acre-ft. The pipe spillway must be designed to provide 103 cfs outflow at 33.1-acre-ft storage.

Example 7-3

Determine the release rates and storage required to maintain present peaks for two structures, one located at the outlet of subarea 4 (site 4A) and one at the outlet of subarea 6 (site 6A) as shown in figure 5-1 and example 5-1. Structure 4A will have a pipe drop inlet spillway and structure 6A will have a straight drop spillway.

1. The decision on the amount of reduction to be accomplished at each structure is more or less arbitrary. Several alternatives should be studied to find the optimum design. This example will illustrate one trial calculation to show the procedure used. First subtract future-condition outflows of subareas 4 and 6 from the future composite hydrograph as follows:

Hydrograph	Time (hours)								
location	13.00	13.20	13.50	14.00	14.50				
Composite discharge (cfs)	819	858	894	774	6 03				
Subarea 4 discharge (cfs)	58	103	188	174	106				
Subarea 6 discharge (cfs)	371	3 3 3	245	138	85				
Composite discharge minus subareas 4 and 6 (cfs)	390	422	461	462	412				

Note that the partial composite hydrograph peak discharge is 462 cfs.

- 2. The combined release rates of the two structures can be 752 cfs (desired peak) less 462 cfs (partial composite peak). Therefore structure 4A release and structure 6A release equals 752 minus 462, or 290 cfs.
- 3. It is now necessary to decide the distribution of the 290 cfs release rate between the two structures. For a first trial assume structure 6A release is 200 cfs and structure 4A release is 90 cfs.
- 4. Determine storage required in structure 6A.
 - a. $Q_O = 200 \text{ cfs} = \frac{200 \text{ cfs}}{0.4 \text{ mi}^2} = 500 \text{ csm}$. Since Q_O is more than 300 csm, use figure 7-2.
 - b. Since figure 7-2 is to be used, the peak inflow (Q_i) at the outlet of subarea 6 must be determined.

Do not use 371 cfs or 245 cfs, because the discharges in table 5-2 and in step 1 above are subarea contributions at the outlet of subarea 7 and not the peak inflow at subarea 6.

Enter table 5-3 for T_c = 1.00 hr (sheet 4 of 5) and T_t = 0 and find Q_1 = 316 csm per inch of runoff.

$$Q_1 = 316 (V_n) = 316 (3.28) = 1,036 \text{ csm}$$

c. Compute required storage (V_S) .

With
$$Q_0 = 500$$
 csm and $Q_1 = 1,036$ csm,
$$\frac{Q_0}{Q_1} = \frac{500}{1,036} = 0.48$$

From figure 7-2, $\frac{V_S}{V_r}$ = 0.29 and with V_r = 3.28 in (future-condition runoff)

$$V_S = 0.29 \ (V_r) = 0.29 \ (3.28) = 0.95 \ in$$

$$= \frac{0.95 \ in \ (640 \ acres/mi^2) \ (0.40 \ mi^2)}{12 \ in/ft} = 20 \ acre-ft$$

5. Determine storage required in structure 4A.

a.
$$Q_0$$
 (step 3) = 90 cfs = $\frac{90 \text{ cfs}}{0.25 \text{ mi}^2}$ = 360 csm

Since $Q_0 = 360$ csm and the outflow structure is a pipe drop inlet, use figure 7-2.

b. Since figure 7-2 is to be used, the peak inflow (Q_i) at the outlet of subarea 4 must be determined. Enter table 5-3 for T_c = 0.75 and T_t = 0 and find Q_i = 388 csm per inch of runoff.

$$Q_i = 388 (V_r) = 388 (2.80) = 1,086 \text{ csm}$$

c. Compute required storage (V_S) .

With $Q_0 = 360$ csm and $Q_1 = 1,086$ csm,

$$\frac{Q_0}{Q_1} = \frac{360}{1,086} = 0.33$$

From figure 7-2 read $\frac{V_S}{V_T}$ = 0.41, and with V_T = 2.80 in,

$$V_S = 0.41 (2.80) = 1.1 in$$

$$= \frac{1.1 \text{ in } (640 \text{ acres/mi}^2)(0.25 \text{ mi}^2)}{12 \text{ in/ft}} = \frac{15 \text{ acre-ft}}{1}$$

6. Summary

Structure	Drainage area	Drainage area Q		Storage
4A	$\frac{\text{mi}^2}{.25}$	<u>esm</u> 368	<u>cfs</u> 90	<u>acre - ft</u> 15
6A	.40	500	200	<u>20</u>
Total			290	35

Other trial calculations can be made to determine the most economical allocation of storage between the two structures that still maintains a combined release rate of 290 cfs.



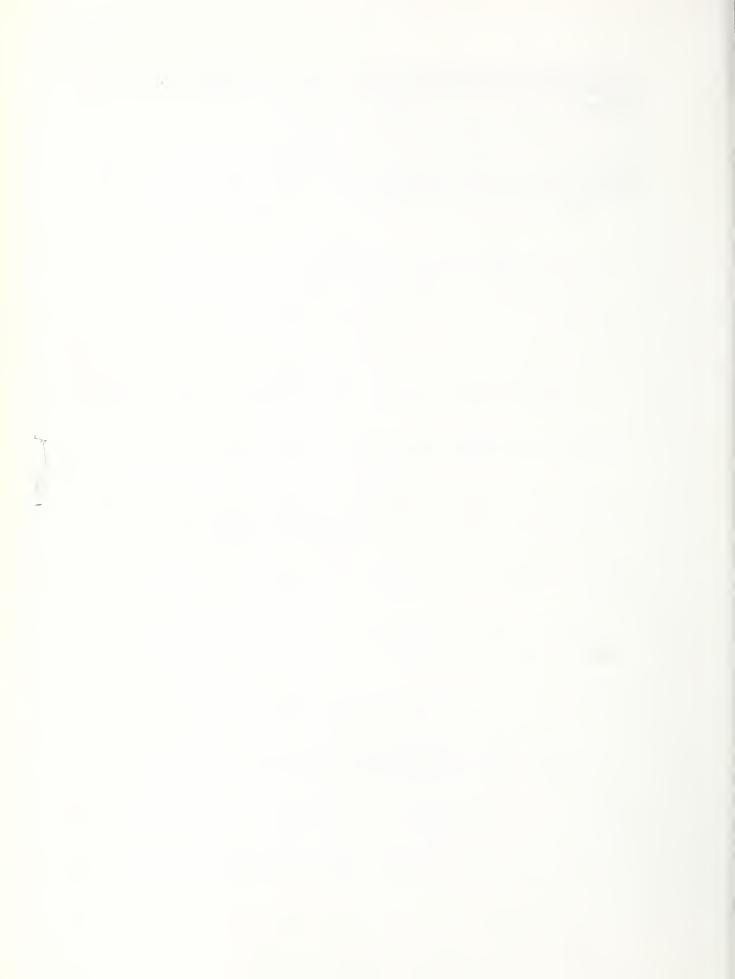
APPENDIX A

URBAN HYDROLOGY BIBLIOGRAPHY

- American Society of Civil Engineers. 1969. Basic information needs in urban hydrology. ASCE Urban Hydrol. Res. Council, 112 p. New York.
- ______ 1969. Effect of urban development on flood discharges-- current knowledge and future needs. ASCE J. Hydraul. Div. 95: 287-309.
- Anderson, D. G. 1970. Effects of urban development on floods in northern Virginia. U.S. Geol. Survey Water-Supply Pap. 2001-C, 22 p. Washington, D.C.
- Anderson, J. J. 1970. Real-time computer control of urban runoff. ASCE J. Hydraul. Div. 96: 153-164.
- Benson, Manuel. 1952. Characteristics of frequency curves based on a theoretical 1,000-year record. U.S. Geol. Survey, Water Resources Div., 21 p. Washington, D.C.
- Brater, E. F. 1968. Steps toward a better understanding of urban runoff processes. Water Resources Res. 4: 335-347.
- Carter, R. W. 1961. Magnitude and frequency of floods in suburban areas. <u>In</u> Short papers in the geologic and hydrologic sciences. U.S. Geol. Survey Prof. Pap. 424-B, pp. B9-B11. Washington, D.C.
- Chen, C. W., and R. P. Shubinski. 1971. Computer simulation of urban storm water runoff. ASCE J. Hydraul. Div. 97: 289-301.
- Dawdy, D. R. 1969. Considerations involved in evaluating mathematical modeling of urban hydrologic systems. U.S. Geol. Survey Water-Supply Pap. 1591-D. Washington, D.C.
- Dawdy, D. R., and T. O'Donnel. 1965. Mathematical models of catchment behavior. ASCE J. Hydraul. Div. 91: 123-137.
- Eagleson, P. S. 1969. Modeling surface runoff in urban hydrology. <u>In</u> ASCE Urban Water Resources Res. 1st year rep. append. A, ch. 4, pp. A32-A78.
- Espey, W. H., Jr., C. W. Morgan, and F. O. Masch. 1965. A study of some of the effects of urbanization on storm runoff from a small watershed. Texas Univ. Cent. Res. in Water Resources, Hydraul. Eng. Lab. Tech. Rep. HYD-07-6501-CRWR-2, 107 p. Austin, Tex.
- Evelyn, J. B., V. V. D. Narayana, J. P. Riley, and E. K. Israelsen. 1970. Hydrograph synthesis for watershed subzones from measured urban parameters. Utah Water Res. Lab., Utah State Univ., 51 p. Logan, Utah.

- Hydrocomp International, Inc. 1971. Studies in the application of digital simulation to urban hydrology. Palo Alto, Calif. Prepared for U.S. Dept. Inter., Off. Water Resources Res.
- Izzard, C. F. 1946. Hydraulics of runoff from developed surfaces. Highway Res. Bd. Proc. 26: 129-146.
- James, L. Douglas. 1965. Using a digital computer to estimate the effects of urban development on flood peaks. Water Resources Res. 1: 223-234.
- James, L. Douglas. 1970. An evaluation of relationships between streamflow patterns and watershed characteristics through the use of OPSET: a self calibrating version of the Stanford watershed model. Univ. Kentucky, Water Resources Inst. Res. Rep. 36. Lexington, Ky.
- Kerky, W. S. 1959. Time of concentration for overland flow. Civ. Eng. 29:60.
- Knapp, G. L., and J. P. Glasby. 1972. Urban hydrology—a selected bibliography with abstracts. U.S. Geol. Survey, Water Resources Invest. 3-72, 211 p. Washington, D.C.
- Knapp, J. W., and W. J. Rawls. 1968. Prediction models for investment in urban drainage systems. U.S. Dept. Inter., Water Resources Res. Cent. Rep. A-Oll-VA, 7 p. Washington, D.C.
- Leopold, Luna B. 1968. Hydrology for urban land planning—a guidebook on the hydrologic effects of urban land use. U.S. Geol. Survey Cir. 554, 18 p. Washington, D.C.
- Leopold, L. B., and T. Maddock. 1953. The hydraulic geometry of stream channels and some physiographic implications. U.S. Geol. Survey Prof. Pap. 252, 57 p. Washington, D.C.
- March, F., and P. S. Eagleson. 1965. Approaches to linear synthesis of urban runoff systems. MIT Hydrodynamics Lab. Rep. 85. Cambridge, Mass.
- Miller, C. R., and W. Viessman, Jr. 1972. Runoff volumes from small urban watersheds. Water Resources Res. 8: 429-434.
- Narayana, V. V. D., J. P. Riley, and E. K. Israelsen. 1969. Analog computer simulation of the runoff characteristics of an urban watershed. Utah Water Res. Lab., Utah State Univ., 83 p. Logan, Utah.
- Terstriep, M. L., and J. B. Stall. 1969. Urban runoff by road research laboratory method. ASCE J. Hydraul. Div. 95: 1809-1834.
- Tholin, A. L., and C. J. Keifer. 1959. The hydrology of urban runoff. ASCE J. Sanit. Eng. Div. 85: 47-106.

- U.S. Soil Conservation Service. 1973. A method for estimating volume and rate of runoff in small watersheds. SCS-TP-149 (Rev.), 60 p. Washington, D.C.
- _____ 1972. Hydrology. Nat. Eng. Handb., Sec. 4. Washington, D.C.
- Viessman, W., Jr. 1966. The hydrology of small impervious areas. Water Resources Res. 2: 405-412.



APPENDIX B

SOIL SERIES AND HYDROLOGIC SOIL GROUPS

This appendix provides soil names and their hydrologic classification used in determining soil-cover complexes in chapter 2 of this technical release. The hydrologic parameter, A, B, C, or D, is an indicator of the minimum rate of infiltration obtained for a bare soil after prolonged wetting. By using the hydrologic classification and the associated land use, runoff curve numbers can be computed as shown in chapter 2.

The hydrologic soil groups, as defined by SCS soil scientists, are:

- A. (Low runoff potential). Soils having a high infiltration rate even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or gravels.
- B. Soils having a moderate infiltration rate when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse texture.
- C. Soils having a slow infiltration rate when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water or soils with moderately fine to fine texture.
- D. (High runoff potential). Soils having a very slow infiltration rate when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

		AKAKA	Δ	AMADDR	D	ARBGR	8	ATLEE	C
AASTAD ABAJD	B C	AKASKA AKELA	B C	AMAGGN AMALU	D D	ARBUCKLE AKCATA	8 8	ATMORE	8/D C
ABBOTT	0	ALADDIN	В	AMANA	в	ARCH	8	ATSION	č
ABBOTTSTOWN	C	ALAE	A	AMARGDSA	D	ARCHABAL	В	ATTERBERRY	В
ABEGG	8 8	ALAELOA ALAGA	В	AMARILLC AMASA	8 8	ARCHER ARCHIN	c	ATTEWAN	A
ABELA ABELL	В	ALAKAI	A C	AMBERSON	0	ARCO	C B	ATTICA ATTLEBORO	В
ABERDEEN	D	ALAMA	С	AMBCY	С	ARCULA	С	ATWATER	В
ABES	D	ALAMANCE	В	AMBRAW	C	ARD	C	ATWELL	C
ABILENF ABINGTON	C B	ALAMC ALAMOSA	C C	AMECEE AMELIA	A 8	ARDEN	8	ATWCOD AUBBEENAUBBEE	8 8
ABIQUA	ć	ALAPAHA	ũ	AMENIA	8	ARDILLA	č	AUBERRY	B
ABO	в	ALAPAI	A	AMERICUS	A	AREDALE	В	AUBURN	C
ABKAHAM	С 8	ALBAN ALBAND	8 C	AMES AMHERST	C C	ARENALES	C A	AUBURNDALE AUDIAN	D B
ABSARUKEE	č	ALBANY	č	AMITY	č	ARENDISVILLE	B	AU GRES	č
ABSCUTA	в	ALBATON	D	AMMON	в	ARENOSA	A	AUG SBURG	В
ABSHER	D	ALBEE	C	AMOLE AMOR	C	ARENZVILLE	В	AUGUSTA	C
ACACIO ACADÉMY	C C	ALBEMARLE ALBERTVILLE	в С	AMDS	B C	ARGUNAUT ARGUELLD	D B	AULD	D B
ACADIA	ΰ	ALBIA	č	AMSTERDAM	в	ARGYLE	В	AURORA	č
ACAVA	υ	ALBION	В	AMTCFT	D	ARIZO	A	AUSTIN	С
ACEITUNAS	8 D	ALBRIGHTS	C C	AMY	D B	ARKABUTLA	C	AUXVASSE	D
ACEL ACKEP	В	ALCALDE ALCESTER	8	ANACAPA ANAHUAC	D	ARKPORT ARLAND	8	AVA	B C
ACKMEN	8	ALCUA	8	ANAMITE	D	ARL ING	Č	AVALANCHE	В
AC MF	C	ALCONA	В	ANAPRA	в	ARLINGTON	A	AVALON	В
ACOLITA	В В	ALCOVA ALDA	e C	ANATONE ANAVERDE	D B	ARLDVAL ARMAGH	C D	AVERY	8 C
ACOVE	č	ALDAX	Ď	ANCHO	Č	ARMINGTUN	Ď	AVONBURG	Ď
ACTON	В	ALUEN	C	ANCHORAGE	Δ	ARMO	В	AVONDALE	В
ACUFF	В	ALDER	3	ANCHOR BAY	D	ARMOUR	В	AWBREY	D
ACWURTH ADA	8 B	ALDERDALE ALDERWOOD	í C	ANCHOR PGINT ANCLUTE	8 C	ARMSTEP ARMSTRONG	C D	AXTELL AYAR	D C
ADAIY	D	ALDIND	č	ANCO	č	ARMUCHEE	Č	AYCCCK	В
ADAMS	A	ALEKNAGIK	В	ANCERS	C	ARNEGARD	В	AYR	В
ADAMSUN ADAMSTITWN	В	ALEX ALEXANDRIA	6 6	ANCER SCN ANCES	B C	ARNHART AKNHEIM	C C	AYRES AYRSHIRE	C C
ADAMSVILLE	c	ALEXIS	В	ANCCRINIA	č	ARNO	D	AYSEES	8
ADATUN	D	ALFORD	8	ANDOVER	Ð	ARNOLD	В	AZTALAN	в
ACAVEN	0	ALGANSEE	В	ANCRES	В	AKNOT	C/D	AZTEC	В
ADDISON ADDY	D C	ALGIERS ALGDMA	0/0	ANCREWS ANEC	C D	AROCSTOCK ARDSA	D	AZWELL AZWELL	C B
ADE	A	ALICE	A	ANETH	A	ARP	Ď	ACHCCC	U
ADEL	A	ALICEL	В	ANGELICA	Ū	AKRINGTON	В	BABB	Δ
ADELATCE ADELANTO	D B	ALICIA ALIDA	C 3	ANGEL INA ANG IE	B/D C	ARROLIME ARRON	C C	BABBINGTON BABCOCK	8
ADELPHIA	ć	ALIKCHI	8	ANGLE	A	ARREW	В	BABYLON	8 A
ACENA	č	ALKD	D	ANGLEN	В	AFROWSMITH	В	BACA	Ċ
ADILLIS	Α	ALLAGASH	В	ANGCLA	C	ARTA	C	BACH	D
ADIROMDACK ACKINS	В	ALLARD ALLEGHENY	В В	ANGCSTURA ANIAK	B	ARTOIS ARVACA	C	BACHUS BACKBONE	8 A
ADLEN	č	ALLEMANDS	Ü	ANITA	D	ARVANA	č	BADENAUGH	В
ADULPH	D	ALLEN	μ	ANKENY	Δ	ARVESON	C	BADGER	С
ADA I AN	A/D	ALLENDALE	c	ANLAUF	C A	ARVILLA	B C	BADGERTON	8 D
AENEAS AETNA	B	ALLENSVILLE ALLENTINE	C 0	ANNABELLA ANNANDALE	Č	AKZELL ASA	В	BADO BADUS	č
AFTON	D	ALLENWOOD	В	ANNISTON	в	ASBURY	-	BAGCAD	В
AGAR	В	ALLEY	C	ANDKA	Α	ASCALGN	В	BAGGOTT	٥
AG1SSIZ AG1TE	D	ALLIANCE ALLIGATOR	B	ANCKES AKSELMC	C A	ASCHUFF ASCHROFT	8	BAGLEY Bahem	8 B
A∪AwA ··	В	ALLIS	D	ANSON	8	ASHBY	č	BAILE	Ď
AGENCY	C	ALLISON	č	ANTELOPE SPRINGS	C	ASHCALE	в	BAINVILLE	С
AGER	D	ALLCUEZ	C	ANTERC	C	ASHE	В	BAIRD HOLLOW	C
AGNER AGNEW	8 8/C	ALLOWAY ALMAC	в	ANT FLAT ANTHONY	C B	A SHKUM A SHLEY	C A	BAJURA BAKEOVEN	D D
AGNUS	8	ALMENA	č	ANTIGO	в	ASH SPRINGS	ĉ	BAKER	č
AGUA	8	ALMONT	C	ANTILON	8	ASHTON	В	BAKER PASS	В
AGUADILLA AGUA CULCE	A C	ALPY ALCHA	6 C	ANTICCH	D C	ASHUEL OT	B C	BALAAM BALCH	A D
AGUA FRIA	č	ALUNSO	В	ANTCINE	č	ASHECOD	č	BALCOM	В
AGUEDA	В	ALCVAR	C	ANTY	в	ASKEW	C	BALD	С
AGUIL ITA	B	ALPENA	В	ANMAY	В	ASC	0	BALGER	C
AGUSTIN	В	ALPON ALPONA	B B	ANZA APACHE	B D	ASCTIN ASPEN	C 8	BALDOCK BALCWIN	B/C D
AHATONE	D	ALPS	.,	APAKUIF	A	ASPERMENT	В	BALDY	В
AHL	C	ALSEA	P	APISHAPA	C	ASSINVIBUINE	8	BALE	C
AHLSTFOM AHMEEK	C B	ALSTAD ALSTEWN	6 L	APISCN	B D	ASSUMPTION ASTATULA	B A	BALLARD	e C
AHUL T	0	ALTAMONT	C	APPLECATE	(AST(K	A/D	BALLINGER BALF	B/C
AHTANUM	C	ALTAVISTA	Ċ	APPLITON	č	ASTOKIA	В	BALPAN	B/C
AHWAH (FE	C	ALTDORF	Ĺ	APPLING	d d	ATASCADERO	C	BALCN	В
AIGUNITO AIKEN	C b	ALTMAR ALTC	В C	APRCK	B C	ATCC ATERIC	8 C	BALTIC BALTIMORE	o e
AIKMAN	Ü	ALTUGA	Č	APTAKISIC	S	ATHELWELD	В	BAMBER	В
AILEY	P	ALTON	Ē	AFABY		ATHENA	В	BAMFORTH	В
AINAKEA	G C	AL TUS	В	AR ACA	В	ATHENS	8	BANCAS	В
ALEDTSA	В	ALTVAN ALVIN	t F	ARAPIEN ARAVE	C D	ATHERTUN ATHEL	E/C	BANCRGFT BANDERA	8
AI <p+ (="" t<="" td=""><td>D</td><td>ALVIZA</td><td>ċ</td><td>ARAVETCN</td><td>8</td><td>ATK I N SC·N</td><td>В</td><td>BANGO</td><td>С</td></p+>	D	ALVIZA	ċ	ARAVETCN	8	ATK I N SC·N	В	BANGO	С
AITS	d	ALVISC	U	ARFELA	C	ATLAS	Đ	BANGOR	В

A BLANK HYDROLOGIC SDIL CROUP IMPLOATES THE SOIL CROUP HAS NOT PERH DETERMINED TWO SOIL GROUPS SUCH AS BYC INDICATES THE DRAIMED/UMBRAIMED SITUATION

BANGSTUN	Δ	BEATTY		BERTELSON	Δ	BLAKENEY	C	BORDA	D
BANKARD	A	BEAUCOUP	В	BERTHOUD	8	BLAKEPORT	8	BORDEAUX	В
HANKS	Α	BEAUFORD	D	BERTIE	С	BLAMER	С	BORDEN	8
BANNER	C	BEAUMONT	D	HERTOLOTTI	8	BLANCA	В	BORDER	В
BANNFRVILLE	C/D	BEAUREGARD	C	BERTRANC	В	BLANCHARD	A	BORNSTEDT	8
BANNOCK	8	BEAUSITE	В	BERVILLE	D	BLANCHESTER	8/D	BORREGO	C
BANQUE LE	D	BEAVERTON	8	BERYL	В	BLAND	C	BORUP	8
BARABOL	В	BECK	C	BESSEMER	В	BLANDFURD	С	BORVANT	D
BARAGA	C	BECKER	В	BETHANY	C	BLANDING	8	BORZA	C
BARBARY	υ	BECKET	C	BETHEL	D	BLANEY	8	BOSANKO	D
BARBITUR	В	BECKLEY	В	BETTERAVIA	C	BLANKET	C	80 S C O	В
BAR BOURVILLE	В	BECKTON	D	BETTS	8	BLANTON	Α	BOSKET	8
BARCLAY	С	BECKWITH	C	BEULAH	8	BLANYON	C	BOSLER	В
BARCO	В	BECKWOURTH	В	BEVENT	В	BLASINGAME	C	BOSCUE	В
BARCUS	8	BECREEK	В	BEVERLY	8	BLENCOE	C	80\$\$	D
BARD	D	BEOFCKO	С	8EW	D	BLENC	D	BOSTON	С
BARDEN	C	BEDINGTON	8	BEWLEYVILLE	8	BLENCON	В	BOSTWICK	8
BARDLEY	C	BEDNER	C	BEWLIN	D	BLETHEN	8	BOSWELL	D
BARELA	С	BEEBE	Α	BEXAR	С	BLEVINS	В	BOSWORTH	D
BARFIELD	D	BEECHER	C	BEZZANT	В	BLICHTON	D	BOTELLA	В
BARFUSS	8	BEFCHY		8186	8/0	BLISS	D	BOTHWELL	С
BAKKER	C	BEEHIVE	8	BIBON	Α	BLOCKTON	C	BOTTINEAU	С
BARKERVILLE	С	BEEZAR	8	BICKELTCN	8	BLODGETT	Α	BOTTLE	Α
BARKLFY	В	BEHANIN	В	BICKMORE	С	BLOMFORD	8	BOULDER	В
BARLANE	D	BEHEMOTOSH	В	BICCNDOA	С	8LGOP	C	BOULDER LAKE	D
BARLOW	В	BEJUCOS	8	BIDDEFORD	D	BLOOMFIELD	Α	BOULDER POINT	8
BARNARD	D	BELDEN	D	BICOLEMAN	С	BLUOMING	8	BOULFLAT	D
BAKNES	8	BELDING	8	BIOWELL	8	BLOGR	D	BOURNE	c
BARNESTON	В	BELFAST	8	BIEBER	D	BLOSSOM	C	80W	Ċ
BARNEY	Δ	BELFIELD	В	BIENVILLE	Α	BLOUNT	c	BOWBELLS	8
BARNHARDT	8	BELFORE	В	BIG BLUE	D	BLUCHER	C	BOWDOIN	D
BARNSTFAD		BELGRADE	в	BIGEL	A	BLUEBELL	č	BOWDRE	č
BARNUM	8	BEL INDA	D	BIGETTY	C	BLUE EARTH	D	BOWERS	Č
BARRADA	D	BELKNAP	c	8 I G G S	Δ	BLUEJCINT	В	BOWIE	В
BARRINGTON	8	BELLAMY	8	BIGGSVILLE	8	BLUE LAKE	A	BOWPAN	В
BARRON	В	BELLAVISTA	D	BIG HGRN	С	BLUEPGINT	8	BOWMANSVILLE	c
BARRONETT	č	BELLE	8	BIG TIMBER	Ď	BLUE STAR	В	BOX ELDER	č
BARROWS	Ď	BELLEFCHTAINE		BIGWIN	A	BLUEWING	В	BOXWELL	č
BARRY	Ď	BELLICUM	8	BIJCU	A	BLUFFDALE	č	80Y	Δ
BARSTOW	8	BELL INGHAM	č	BILLETT	A	BLUFFTON	Ď	BOYCE	8/D
BARTH	Č	BELLPINE	č	BILLINGS	c	BLUFORD	Ď	8070	0
BARTLE	Ď	BELMONT	В	BINEORD	В	BL Y	8	BOYER	В
BARTON	8	BELMORE	8	BINGHAM	8	BLYTHE	D	BOYNTON	U
BARTONFLAT	В	BELT	D	BINNSVILLE	Ď	BDARCTREE	Č	BOYSAG	D
BARVON	č	BELTED	Ď	BINS	8	8085	ŏ	BOYSEN	B
BASCOM	8	BELTRAMI	8	BIPPUS	8	BOSTAIL	В	BOZARTH	Ċ
BASEHOR	D	BELTSVILLE	č	BIRCH	A	BOCK	8	BOZE	В
BASHAW	Ď	BELUGA	č	BIRCHWOOD	ĉ	BODENBURG	8	BOZEMAN	Ā
BASHEK	B	BELVCIR	č	BIRDS	č	BUDINE	В	BRACEVILLE	ĉ
BASILE	Ď	BENCLARE	č	BIRCSALL	D	80EL	Ā		Ď
BASIN	c		č	BIRDSBORO	8	BOELUS		BRACKEN	Č
		BENEVOL A					A	BRACKETT	
BASINGER	C	BENEWAH	C	BIRDSLEY	D	BOETTCHER	C	BRAD	D
BASKET	c	BENF IRLD	Č	BIRKEECK	В	BOGAN	С В	BRADDOCK	C
BASS	A	BENGE	е	BISBEE	A	BOGART		BRACENTON	8/0
BASSEL	В	BEN HUR	В	BISCAY	C	BOGUE	D	BRACER	C
BASSETT	В	BENIN	D	BISHOP	8/C	BOHANNON	C	BRADFORD	В
BASSLER	D	BENITO	D	BISPING	8	BCHEMIAN	8	BRADSHAW	A
BASTIAN	D	BENJAMIN	D	BISSELL	8	BOISTFORT	C	BRADWAY	C
BASTROP	В	BEN LOMOND	8	RIT	D	BOLAR	C	BRACY	8
BATAVIA	8	BENMAN	Δ	BITTERON	A	8CLD	В	BRACYVILLE	C
BATES	8	BENNCALE	В	BITTERRCOT	C	BOLES	C	BRAHAM	6
BATH	Ç	BENNETT	C	BITTER SPRING	Ç	BGL I VAR	В	BRAINERD	В
BATTLE CREFK	C	BENNINGTON	D	BITTERSPRING	C	BOLIVIA	8	BRALLIER	D
BATZA	C	BENOIT	C	BIXBY	8	BOLTON	8	BRAM	8
BAUDETTE	8	BENSON	C/D	BJCRK	C	BOMBAY	8	BRAMARD	8
BAUER	C	BENTONVILLE		BLACHLY	C	80N	8	BRAMBLE	C
BAUGH	8/C	BENZ	D	BLACK BUTTE	C	BONACCURD	C	BRAMWELL	D
BAXTER	8	BECTIA	В	BLACK CANYON	D	BONAPARTE	A	BRAND	D
BAXTERVILLE	8	BECHANE	D	BL ACKCAP	A	BCND	C	BR ANDENBURG	A
BAYAMON	В	BERCAIL	С	ELACKETT	8	BGNURANCH	D	BR ANDON	В
BAYARD	A	BERDA	В	BLACKFOOT	8	BENDURANT	8	BRANDYHINE	C
BAYBORT	D	BEREA	C	BLACKHALL	D	BONE	D	BRANFORD	8
BAYSHORE	B/C	BERENICETON	P	BLACKHAWK	D	BONG	В	BRANTFORD	8
BAYSIDE	C	BERENT	Δ	BLACKLEAF	8	BONHAM	C	BRASHEAR	С
BAYWOOD	A	BERGLAND	D	BLACKLOCK	D	BCNILLA	8	BRASSFIELD	8
BAZETTT	C	BEKGSTROM	8	PLACKMAN	C	BCNITA	D	BRATTON	В
BEAD .	C	BEK INO	В	BLACK MCUNTAIN	8	BCNN	D	BRAXTON	C
BEADLE	C	BEKKELEY		BLACKCAR	C	BCNNER	8	BRAYMILL	8/0
BEALES	Α	BEKKS	C	BLACKPIPE	C	BONNET	8	BRAYS	D
BEAR BASIN	8	BEKKSHIRE	В	BLACK RIDGE	C	BCNNEVILLE	В	BRAYTON	С
BEAK CREEK	С	BERLIN	C	BLACKRCCK	8	BUNNICK	Α	BRAZITO	Α
BEARDALI	C	BERMUDIAN	В	BLACKSTCN	8	BONNIE	C	BRAZOS	A
BEARDEN	С	BERNAL	C	BLACKTAIL	8	BONG	D	BRECKENRIDGE	D
BEARDSTOWN	C	BERNALOO	В	BLACKWATER	D	BON2 ALL	D	BRECKNOCK	8
BEAR LAKE	D	BERNARD	ο	BLACKWELL	8/0	BGNTA	С	BREECE	8
BEARMI)UTH	Δ	BEKNARDINU	C	BLACEN	D	BONTI	C	BREGAR	0
BEARPAW	В	BERNARDSTON	C	BLAGC	D	BCOKER	D	BREMEN	В
BEAK PRAIPIE	8	BERNHILL	В	BLAINE	В	BCOMER	8	BREMER	8
BEAKSKIN	D	BERNICE	Α	BLAIR	С	BOUNE	Α	BREMO .	С
BEASLEY									
	C	BERNING	С	BLAIRTCN	C	BCONESBORG	8	BREMS	Δ
BEASON				BLAIRTCN BLAKE	C	BCONESBORG BOOTH	8 C	BREMS BRENDA	A C
	C	BERNING	С						

NOTES A BLANK HYDROLOGIC SOIL GROUP INDICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/INDRAINED SITUATION

January 1971

BRENNER	C/D	BUCKLEY	B/C	CAIC	8	CAPUTA	C	CATLIN	8
BRENT	С	BUCKLON	D	CAIRO	D	CARACO	С	CATNIP	D
BRENTON	В	BUCKNER	Α	CAJALCO	С	CARALAMPI	В	CATGCTIN	С
BRENTWOOD	В	BUCKNEY	Α	CAJCN	A	CARBO	C	CATLOSA	В
BRESSER	В	BUCKS	В	CALABAR	D	CARBOL	D	CATSKILL	A
BREVARD	В	BUCKSKIN	C	CALABASAS	C	CARBONDALE	D	CATTARAUGUS	C
BREVORT	8	BUC ODA	C	CALAIS CALAMINE	C	CARBURY	В	CAUDLE	В
BREWER	С	BUDD	В	CALAPINE	0	CARDIFF	В	CAVE	D
BREWSTER	D	BUDE	c		C B	CARCINGTON	C	CAVE ROCK	A
BREWTON	C	BUOE	C A	CALAWAH CALCO	C	CARDON	D B	CAVC	D
BRICKEL	C	BUELL BUENA VISTA	В	CALDER	Ď	CAREY LAKE	8	CAVODE CAVCUR	C D
BRICKTON BRIDGE	C C	BUFFINGTON	8	CALDWELL	8	CAREYTOWN	D	CAWKER	В
BRIDGEHAMPTON	В	BUFF PEAK	č	CALEAST	č	CARGILL	č	CAYAGUA	č
BRIDGEPORT	В	BUICK	č	CALEB	В	CARIBE	В	CAYLOR	В
BRIDGER	A	BUKREEK	В	CALERA	č	CARIBEL	В	CAYLGA	č
BRIDGESON	B/C	BULLION	Ď	CALHI	Ā	CARIBGU	В	CAZADERO	č
BRIDGEVILLE	В	BULLREY	В	CALHOUN	Ď	CARLIN	Ď	CAZADOR	В
BRIDGPORT	ß	BULL RUN	В	CALICO	D	CARLINTON	В	CAZENOVIA	В
BRIEDWELL	В	BULL TRAIL	В	CALIFON	č	CARLISLE	A/D	CEBOLIA	Ċ
BRIEF	В	BULLY	В	CALIPUS	В	CARLCTTA	В	CECIL	В
BRIENSBURG		EUMGARD	В	CALITA	В	CARLEW	D	CEDARAN	D
BRIGGS	A	PUNCOMBE	A	CALIZA	A	CARL SHAD	С	CEDAR BUTTE	С
BRIGGSDALE	С	BUNDO	В	CALKINS	C	CARLSBORG	Α	CEDAREDGE	Ą
BRIGGSVILLE	С	PUNE JUG	c	CALLAHAN	С	CARLSON	С	CEDAR MT.	D`
BRIGHTON	A/D	BUNKER	D	CALLEGUAS	D	CARLTON	В	CEDARVILLE	В
BRIGHTWOOD	С	BUNSELMETER	C	CALLINGS	Ç	CARMI	В	CEDONIA	В
BRILL	В	BUNTINGVILLE	8/C	CALLCHAY	С	CARNEGIE	C	CEDRON	C/D
BRIM	C	BUNYAN	В	CALMAR	В	CARNERO	C	CELAYA	В
BRIMFIELD	C/D	BURBANK	A	CALNEVA	C	CARNEY	D	CELETON	D
BRIMLEY	В	BURCH	8	CALCUSE	В	CAROLINE	C	CELINA	c
BRINEGAR	В	BURCHARD	В	CALPINE	В	CARR	В	CEL 10	A
BRINKERTON	D	BURCHELL	8/0	CALVERT	D C	CARRISALITOS CARRIZO	D A	CELLAR	D
BRISCOT BRITE	B C	BURDETT BUREN	C C	CALVERTON	Č	CARSC	D	CENCOVE CENTER	B C
BRITTON	č	BURGESS	В	CALVISTA	D	CARSON	Ď	CENTER CREEK	В
BRIZAM	A	BURGI	В	CAM	В	CARSTAIRS	В	CENTERFIELD	В
BROAD	ĉ	BURGIN	Ď	CAMAGUEY	Ď	CARSTUMP	č	CENTERVILLE	Ď
BROADALBIN	č	BURKE	č	CAMARGO	В	CARTAGENA	Ď	CENTRALIA	В
BROADAX	В	BURKHARDT	В	CAPARILLO	B/C	CARTECAY	č	CENTRAL POINT	В
BRDADBROCK	Č	BURLEIGH	Ď	CAMAS	A	CARUSC	č	CERESCO	A
BROAD CANYON	B	BURLESON	Ď	CAPASCREEK	8/0	CARUTHEPSVILLE	B	CERRILLOS	Ĉ
BRUADHEAD	c	BURL INGTON	A	CAMBERN	С	CARVER	A	CERRO	c
BROADHURST	Ď	BURMA		CAMERIDGE	č	CARWILE	Ĉ	CHACRA	č
BROCK	D	BURMESTER	D	CAPCEN	В	CARYVILLE	8	CHAFFEE	С
BRUCKLISS	С	BURNAC	c	CAMERON	D	CASA GRANDE	C	CHAGRIN	В
BPOCKMAN	С	BURNETTE	в	CAPILLUS	В	CASCADE	C	CHAIX	В
BRUCKPURT	D	BURNHAM	D	CAMP	В	CASCAJO	В	CHALFONT	С
BROCKTON	D	BURNSIDE	В	CAMPBELL	R\C	CASCILLA	В	CHALMERS	C
BROCKWAY	8	BURNSVILLE	Б	CAMPHDRA	В	CASCO	В	CHAMA	в
BRUDY	С	BURNT LAKE	В	CAMPIA	В	CASE	В	CHAPBER	С
BROGAN	В	BURRIS	D	CAPPC	С	CASEBIER	0	CHAMBERINO	С
BROGUEN	В	BURT	0	CAMPONE	B/C	CASEY	C	CHAMISE	В
BRDLLIAR	D	BURTON	В	CAPPSPASS	С	CASHEL	С	CHAPOKANE	В
HROMO	ь	BUSE	8	CAMPUS	В	CASHICN	D	CHAPPION	9
BRONAUGH	В	BUSHNELL	C	CAPRODEN	Ĺ	CASHMERE	R	CHANCE	8/0
BRONCHO	В	BUSHVALLEY	D	CANA	C	CASHFONT	В	CHANDLER	8
BRONSON BRONTE	B C	BUTANO	C C	CANADIAN	C/D 8	CASINC CASITO	A C	CHANEY CHANNAHON	C B
BYDOKE	Č	BUTLER	D	CANACICE	Ď	CASPAR	В	CHANNING	В
BROOKFIELD	В	BUTLERTOWN	Č	CANANDAIGUA	G	CASPIANA	В	CHANTA	В
BROOKINGS	В	BUTTE	č	CANASERAGA	č	CASS	Δ	CHANTIER	Ď
BROCKLYN	Ö	BUTTERFIELD	č	CANAVERAL	č	CASSACAGA		CHAPIN	c
BROCKSIDE	č	BUXIN	Ď	CANDELERC	č	CASSIA	С	CHAPMAN	•
BROOKSTON	8/0	BUXTCN	С	CANE	С	CASSCLARY	б	CHAPPELL	В
BROCKSVILLE	D	EYARS	D	CANEADEA	D	CASSVILLE		CHARD	В
AROSELEY	В	BYRGN	Α	CANEEK	В	CASTAIC	C	CHARITON	D
BROSS	В			CANEL	Б	CASTALIA	C	CHARITY	D
BROUGHTON	D	CABALLO	С	CANELCX	С	CASTANA	8	CHARLESTON	С
BROWARD	С	CABARTON	С	CANEY	С	CASTELL	С	CHARLEVOIX	В
BRGWNELL	В	CABBA	C	CANEYVILLE	C	CASTILE	В	CHARLOS	Α
BRD = NFIELO	A	CABBART	C	CANFIELD	c	CASTINE	C	CHARLOTTE	A/D
BRUWNLEE	В	CABEZON	D	CANISTEO	ć	CASTLE	D	CHARLTON	В
BROYLES	C	CABIN	C	CANNINGER	8	CASTLE VALLEY	0	CHASE	C
BRUCE	D	CAGINET	С	CANGE	8	CASTNER	C	CHASEBURG	В
BRUNEEL	C B	CABLE CABO RUJD	D C	CANCNCITO	C	CASTO CASTRO	C	CHASKA CHASKA	A C
BRUND	A	CABOT	£	CANTON	8	CASTROVILLE	В	CHASTAIN	D
BRUNT	ĉ	CACAPUN	6	CANTRIL	6	CASUSE	C	CHATBURN	В
BRUSETT	В	CACHE	Ď	CANTUA	В	CASHELL	В	CHATFIELD	J
BRUSH	_	CACIQUE	В	CANUTIO	В	CATAL INA	В	CHATHAM	ь
BRUSSETT	Б	CADDC	Ď	CANYLN	ນັ	CATALPA	č	CHATSWCRTH	Ď
BRYAN	A	CADEVILLE	ő	CAPAC	в	CATANO	A	CHAUNCEY	č
BRYCAN	В	CADMUS	В	CAPAY	D	CATARINA	٥	CHAVIES	В
BKYCE	υ	CADGMA	C	CAPE	o	CATAULA	C	CHAMANAKEE	С
BUCAN	n	CAUOR	С	CAPE FEAR	D	CATAMBA	В	CHEADLE	С
BUCHANAN	С	CAGEY	C	CAPERS	D	CATH	D	CHECKETT	C
BUCHENAU	C	CAGUABO	D	CAPILLO	D	CATHCART	В	CHECAHAP	В
BUCHER	С	CAHABA	В	CAPLES	c	CATHEDRAL	C	CHEEKTCWAGA	D
BUCKINGHAM		CAHILL	ß	CAPPS	В	CATHERINE		CHEESMAN	В
BUCKLAND	C	CAHUNE	c	CAPSHAW	c	CATHRO	D	CHEHALEM	C
BUCKLEBAG	В	CAHTC	С	CAPULIN	С	CATLETT	C/D	CHEMALIS	В
	NOTES	A GLANC HYD	2120100	COLL CROUP IN	DICATEC	THE COLL COOLLD HA	C NOT	ACCH ACTCOMINED	

NOTES A BLANK HYDPOLOGIC SOIL GROUP INDICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS BYC INDICATES THE DRAIMED/UNDRAIMED SITUATION

CHEHUL PUM	C	CHUTE	A	CCACHELLA	е	CONALB	В	CDTITO	C
CHCL AN	В	CIALES	0	CCAD	В	CCNANT	Ĺ	COIC	C
CHELSEA	Δ	CIALITUS	В	COAL CREEK	C	CONASAUGA	C	COTCPAXI	Α
CHEMAWA	В	CIBEQUE	В	CCALMONT	C	CONATA	0	COTT	В
CHEMUNG		CIBU	D	COAMC	С	CGNBGY	D	COTTER	В
CHEN	0	CIBOLA	В	COARSEGELD	В	CONCHAS	C	COTTERAL	В
CHENA	Δ	CICERD	0	CGATICOOK	C	CGNCHO	C	COTTIER	В
CHENANGO	Α	CIDERCONE	В	CGATSBURG	D	CONCCNULLY	В	COTTGNHDOD	Ċ
CHENEY	В	CIDRAL	C	COBB	В	CONCORU	0	COTTRELL	C
CHENNETTY	c	CIENEBA	e	CLBEN	D	CONCREEK	е	COUCH	C
CHENDHETH	В	CIMA	C	COBEY	В	CONUA	C	COUGAR	C
CHEQUEST	Ċ	CIMARRGN	C	CCEURG	C	CONDIT	C	COULSTONE	В
CHEREFTE	A	CINCINNATI	c	CGCHETDPA	č	CONDON	Ċ	COUNTS	č
CHEROKEE	0	CINCO	Α	CGCCA	A	CGNE	۵	CGUPEVILLE	e
CHERKY	č	CINEBAR	В	COCOLALLA	С	CCNEJO	C	COURT	В
CHERRYHILL	С	CIACLE	C	CODCRUS	C	CGNESTUGA	В	COURTHOUSE	D
CHERRY SPRINGS	Ö	CIRCLEVILLE	č	CODY	Ā	CGNESUS	В	COURTLAND	В
CHESAM	В	CISNE	D	CCE	A	CCNGAREE	В	COURTNEY	D
CHESHIRE	В	CISPUS	Δ	CCEBURN	C	CONI	D	COURTROCK	В
CHESHNINA	Ö	CITICO	В	CCFF	Ď	CUNLEN	В	COUSE	Č
CHESNIMNUS	В	CLACKAMAS	Ü	CGGGON	В	CCNLEY	c	COUSHATTA	В
CHLSTER	В	CLAIBGRNE	В	COGSWELL	Č	CONNEAUT	č	COVE	D
CHESTERTON	c	CLAIRE	Δ	COHASSET	В	CONNECTICUT		COVEILG	В
CHETCO	D	CLAIREMONT	В	COHGCTAH	Ö	CCNNEH	В	COVELANO	č
CHETEK	В	CLALLAM	В	COFCE	В	CONDITION	В	COVENTRY	В
CHEVELTN	č	CLAM GULCH	č	COLL	č	CCNUVER	В	COVEYTOWN	Č
CHEWACLA	č	CLAMC	c	CGKEDALE	č	CUNUWINGU	č	CUVINGTON	D
CHEWELAH	В	CLANTON	č	CGKEL	č	CONRAD	В	COMAN	A
CHEYENNE	В	CLAPPER	В	CGKER	ō	CONRUE	В	COWARTS	c
CHIARA	D	CLAREMORE	c	CCKESBURY	Ö	CGNSER	C/0	COMDEN	Ü
CHICKASHA	В	CLARENCE	C	CCKEAILLE	В	CONSTABLE	A	CUMERY	C
CHICOPFE	В	CLARESON	č	CCLEATH	Č/0	CONSUMO	В	COWEEMAN	č
CHICOTE	D	CLAMEVILLE	č	CCLBERT	0	CONTINENTAL	č	COWERS	В
CHIGLEY	č	CLARINDA	D	CCLBURN	В	CONTRA COSTA	č	COMICHE	в
CHILCOTT	Ö	CLARICN	В	CCLBY	В	CONVENT	č	COWGOD	č
CHILDS	В	CLARITA	D	COLCHESTER	В	COOK	ő	COX	D
CHILGREN	c	CLARK	В	CCLDEN	U	CCGKPGRT	č	CUXVILLE	D
CHILHOWIE	č	CLARK FORK	A	COLO SPRINGS	C	CCULBRITH	В	COYATA	Č
CHILI	В	CLARKSBURG	c	CCLE	e/c	CUULVILLE	Č	COZAD	В
CHILLICOTHE	Č	CLARKSDALE	Č	CLLEBRCCK	В	COOPBS	В	CRABTON	В
CHILLISQUAQUE		CLARKSON	В	COLEMAN	č	COUNEY	В	CRADDOCK	В
CHILLUP	н	CLARKSVILLE	e	CGLEMANTCHN	Ď	CCGPER	č	CRACLEBAUGH	D
CHILMAPK	В	CLARNO	E	CCLETU	Ā	CCGTER	č	CRAFTON	Č
CHILU	8/0	CLARY	В	CCLFAX	ĉ	CCPAKE	В	CRAGO	В
CHILUQUIN	В	CLATO	В	CCLINAS	В	COPAL IS	В	CRAIG	Ç
CHILSON	D	CLATSOP	D	CCLLAMER	Č	COPELAND	8/0	CRAIGMENT	Č
CHILTON	В	CLAVERACK	č	CCLLARD	В	COPITA	В	CRAFER	Ď
CHIMAY.	Č	CLAWSGN	č	CCLLBRAN	č	CCPLAY	U	CRANE	В
CHIMNEY	В	CLAYBURN	6	CCLLEEN	c	CCPPER RIVER	D	CRANSTON	В
CHINA CREEK	В	CLAYSPRINGS	D	CCLLEGIATE	Č	COPPERTON	В	CRARY	Č
CHINCHALLO	B/D	CLAYTON	В	CCLLETT	Č	CGPPOCK	е	CRATER LAKE	В
CHINIAK	A	CLEARFIELD	C	CGLLIER	Δ	CUPSEY	0	CRAVEN	C
			0		**		C/0		0
CHIND CHINDUK	в /с В	CLEAR LAKE	C	CCLLINGTON CCLLINS	B C	CONCILLE	0	CRAMFORD CREAL	0
CHIPETA	D	CLE FLUM	В	CCLLINSTON	Č	CORAL	Č	CREBBIN	C
CHIPLEY	Č	CLEGG	В	CCLLINSVILLE	Č	CORBETT		CREEDMAN	
CHIPMAN	Č	CLEMAN	В	CCTAV	В	CORBIN	C B	CREED#OCR	C
CHIPPENY	D	CLEMAILLE	В	CCLMCR	c	CORCEGA	c	CRE IGHT CN	В
CHIPP: AA	8/0	CLECRA	В	CGLC	ė	CCKL	Č	CRELDGN	В
CHIQUITU	C	CLERF	В	CCLCCKUM	В	CURCES	В	LRE SBARD	Č
CHIRICAHUA	Ö	CLERMONT	Č	COLCMA	A	CORDEVA	č	CRESCENT	В
CHITINA	В	CLEVERLY	A	CCLC#BC	В	COKINTH	č	CRESCG	c
CHITTENDEN	č	CLIFFDGWN	ĉ	CGLGNA	č	CURKINDALE	В	CREST	Č
CHITWOUL	č	CLIFFHOUSE	č	CCLCNIE	Ā	CURLENA	A	CRESTLINE	e
CHIVATO	Ď	CLIFFORD	В	CCLCRADG	В	CORLETT	8	CRESTMORE	_
CHIWAWA	В	CLIFFWGOO	Č	CCLCRCCK	Č	CURLEY	č	CRESTON	Δ
CHU	c	CLIFTERSON	B	CCLCSC	Ö	CURMANT	č	CRESWELL	C
CHUREE	Ď	CLIFTON	č	CCLCSSE	Ā	CCHNHILL	В	CRETE	Ď
CHUCK	B/D	CLIFTY	В	CCLP	D	CORNING	D	CREVA	D
CHCCOLGCCO	В	CLIMARA	D	CLLRAIN	В	CORNUTT	č	CREVASSE	A
CHUPAKA	c	CLIMAX	c	CCLTCN	A	CCRNVILLE	В	CREWS	0
CHOPTANK	Δ	CLIME	C	CLLTS NECK	а	CURCZAL	c	CRIDER	В
CHUPTIE	D	CLINTON	В	CELUMBIA	В	CGPPENING	D	CRIM	В
CHORALMONT	В	CLODINE	C	CCLUMBINE	Α	CORKALITOS	Α	CRISFIELD	В
CHOTEAU	C	CLCNTARF	В	CCLUSA	c	CCHRECII	C	CKITCHELL	В
CHRISTIAN	C	CLUQUALLUM	C	CCLVILLE	В	CUPRERA	D	CRIVITZ	Δ
CHR ISTIANA	В	CLIQUATO	3	CCLVIN	С	CCRSCN	C	CRGCKER	Α
CHRISTIANBURG	0	CLCQUET	В	CCLWGCD	8/0	CURTEZ	D	CRCCKETT	D
CHRISTY	В	CLCUD	D	CCLYER	C/0	CORTINA	A	CROFTGN	В
CHROME	C	CLCUDCROFT	C	CC#ERIC	В	CCHUNNA	C	CRDGHAN	В
CHUALAF	В	CLOUD PEAK	6	CCMETA	C	CURVALLIS	В	CRUCKED	C
CHUBHS	C	CLGUD RIM	В	COMPREY	С	CORWIN	В	CRGCKED CREEK	D
CHUCKAWALLA	В	CLOUGH	D	CGMITAS	A	CCKY	Č	CROCKSTON	В
CHULITNA	В	CLCVERCALE	C	COPLY	C	CERYCUN	c	CRGCM	В
CHUMMY	C	CLGVER SPRINGS	В	CCMMERCE	C	CUSAC	C	CROPLEY	C
CHUMSTICK	C	CLLVIS	В	CLMO	Δ	COSH	C	CRUSBY	C
CHUPADERA	В	CLUFF	C	CCMOCORE	В	CCSHCCTCN		CRGSS	D
CHURCH	0	CLUNIE	D	CCMCRD	В	COSKI	В	CROSSVILLE	В
CHURCHILL	D	CLURO	C	CCMPTCHE	В	CCSSAYUNA	c	CROSWELL	Α
CHURCHVILLE	0	CLURG	c	CCPPTGN	C	COSTILLA	A	CROT	D
CHURN	В	CLYDE	C	CLMSTCCK	Ċ	CCTACU	C	CROTON	0
CHURNUASHER	В	CLYMER	Ð	CCMUS	В	COTATI	C	CROUCH	В
	NOTES	A BLANK HYDROL	00.0						

NOTES A BLANK HYDDOLOGIC SOIL GROUP INDICATES THE SCIL GROUP HAS NOT BEEN DETERMINED TWO SOIL CROUPS SUCH AS B/C INDICATES THE DEALMED/UNDRAINED SITUATION

CROW	C B	DANZ	В	CEL REY	C	DIXMONT	C B	DRY CREEK	C
CROW CREEK CROWEGOT	C	DAKGOL DAKIEN	e c	DELTA	C C	DIXMCKE	C	DRYDEN DRY LAKE	B C
CRUWHEART	В	DARL ING	8	DELTEN	В	CIXVILLE	Α	CUANE	В
CRUW HILL	Ĺ	DAKNELL	С	CELWIN	A	CCAK	С	DUBAKELLA	C
CROWLEY CHUWN	D B	DARNEN DAKR	B A	CELYNDIA DEMAST	8 8	DC982	8	DUBAY DUBBS	D B
CREWSHAW	8	CARRET	Ĉ	DEMASTERS	В	CCCAS	В	CUBCIS	č
CRUZIFR	С	DARRCCH	С	DE MAYA	С	CCCKERY	C	CUBUÇUE	В
CRUCKTON	В	CART	A	CEMERS	D	DCCT	8	BUCEY	В
CRUICKSHANK CRUME	C B	CA°VADA DAHMIN	D D	CEMKY DEMONA	D C	DODGE DODGEVILLE	8 8	DUCHESNE DUCKETT	A C
CHUMP	D	CASSEL	D	DEMCPGLIS	С	DUDSCN	č	CUCCR	č
CHUTCH	В	UATEMAN	С	DEMPSTER	В	DUGER	Α	AUUO	A
CPUTCHER CRUZL	O C	DATINO DATWYLER	c c	DENAY DENISON	B C	CUGUE CCL AND	C B	DUDLEY	D 8
CRYSTAL LAKE	В	CAULTON	0	DENMARK	Ď	DCLF	č	DUELM	c
CRYSTAL SPRINGS		CAUPHIN		CENNIS	С	DCLLAR	ь	DUFFAU	В
CRYSTOLA	В	DAVEY	A	CENNY	D	DCLLARD	С	DUFFER	0
CUBERANT	B B	DAVIDSON CAVIS	В В	CENROCK DENTON	0	DUL CRES DUL PH	B C	DUFFIELD CUFFSON	8 B
CUCHILLAS	D	CAVISON	B	CENVER	č	DDMINGD	č	DUFFY	В
CUDAHY	υ	DAWES	C	DEPEW	C	DCMINGUEZ	C	DUFUR	В
CUDIYH	B B	DAWHCO DAWSCN	6/D	CEPCE DERINCA	D C	DGMINIC DCMINO	A C	DUGGINS DUGCUT	0
CUEVA	Ď	DAY	Ď	CESAN	A	DCNA ANA	ě	CUGHAY	Č
CUEVITAS	D	DAYBELL	A	CESART	С	DCNALD	8	DUKES	A
CULLEN	C	DAYTON	0	DE SCAL ABRADO	D C	CUNEGAL	С	CUL AC	C
CULLEDKA	B C	DAYVILLE	D B\C	CESCHUTES CESERET	C	DDNERAIL DGNICA	A	DUMAS DUMECQ	B C
CULPERER	č	DEACON	в	CESHA	D	DENLENTON	Č	CUMENT	č
CULVERS	C	CEADFALL	В	CESPLER	C	CCNNA	0	DUNBAR	0
CUMBERLAND CLIMLEY	B C	CEAMA DEAN	C B	DESCLATION DESCRAIN	C B	DENNAN CUNNYBRDCK	C D	DUNBARTON CUNBRIDGE	В С
CUMMINGS	E/0	DEAN LAKE	ć	DETER	č	DCNC VAN	В	DUNCAN	Ď
CUNICO	C	DEAROURFF	В	DETLÜR	C	CDULEY	A	DUNCANNON	8
CURPER	В	DEARY DEARYTON	C	DETCUR	C	CCDNE	e 8	DUNCCM	υ
CURPLI CURECANTI	C B	DEATMAN	B C	CEIKDII	С 8	DEUR DDRA	0	DUNCAS	C A
CURLEW	č	CEAVER	č	CEVILS CIVE	ΰ	CGRAN	č	LUNCEE	ĉ
CUKKAN	Ç	DEPENGER	C	DEVCL	В	CURCHESTER	٤	DUNELLEN	В
CURKANT CURTIS CREEK	G D	DECATHON	D D	CEVCN CEVCRE	8 B	DOROSHIN DORUTHEA	C	CUNE SAND DUNGENESS	A B
CURTIS SIDING	A	DECATUR	8	DEWART	.,	CCREVAN	Ö	CUN GLEN	č
CUSHING	В	DECCA	В	DEMEA	ь	DCKS	à	CUNKINSVILLE	8
CUSHMAN	C	DECKER	С	CEMVILLE	В	CORSET	8	DUNKIRK	8
CUSTER	C D	DECKERVILLE	C E	DEXTER CIA	C B	DUS CALEZAS DUSSMAN	C B	DUNLAP DUNPDRE	8 B
CUTZ	Ü	DECORRA	В	DIABLC	Ď	DUTHAN	ě	DUNNING	Č
CUYAMA	P.	DECRESS	Ü	DIAMEND	C	ODTTA	В	DUNPHY	C
CYLINDER CYNTHIANA	8 C/D	DEE DEERWATER	C	DIAMOND SPRINGS DIAZ	C C	DCUBLETOP DUTY	B ₿	DUNVILLE DU PAGE	8 e
CYRREMURT	c	DEEK CREEK	c	DIBBLE	c	CCUCS	ė	CUREE	Č
CYRIL	В	CEERFIELD	В	CICK	Α	CDUCHERTY	Α	DUPLIN	С
04806	0	DEERFORD	D	CICKEA	A	COUGHTY	A	DUPC	c
DAC(NA	8 C	DEER ING DEERLDDGE	C	CICKINSON	Č	COUGLAS DOURC	8	DUPCNT DUPREE	0
LADE	A	DEER RARK	A	DIGEY	č	COVER	8	CURALDE	č
CAFTEK	В	DEEXTON	В	DIGGER	C	COVRAY	D	DUR AND	В
CAGGETT DAGLU*	A D	CEERTKAIL DEFIANCE	C D	DILL	B B	COW CCWAGIAC	B	DURANT DURELLE	D B
DAGOK	В	DEFURD	Ð	CILLARD	č	CCADEN	č	DURFAM	8
CAGUAO	Ĺ	DEGARMO	b/C	CILLOCHY		CCWELLTON	C	CURKEE	C
DAGUEY DAHLUUIST	C B	DEGNER	С	DILLINGER	В	CCMNEK	€ B	CURCC	В
DATGLE	Ĉ	DE GREY DEJAKNET	9 0	DILLWAN	D A	DOWNS	9	CURRSTEIN CUTCHESS	D 8
CALLEY	A	CEKALB	С	GILMAN	C	CCXIE	c	DUTSGN	C
DAKCTA	8	DEKCVFN	r.	DILTS	D	CCYCE	c	DUTTEN	D
DALBO	8 D	DELAKE DELANCU	8 (OILWCRTH CIPAL	C C	CCAFE	A	DUVAL DUZEL	8
DALE	B	CELANEY	A	CIMYAW	c	COYLESTOWN	D	CWIGHT	υ
DALHART	В	DELANU	A	DINGLE	В	DLYN	С	UWYER	A
DALIAN DALLAS	В В	DELECO DELENA	E E	DINGLISHNA DINKELMAN	E C	CKA Dracut	C C	CYE	C
DALTON	č	DELFINA	8	CINKEY	Ā	CRAGE	9	DAKE	е
DALUPF	ū	DELHI	A	CINNEN	В	CRAGOUN	В	DYRENG	U
DAMA SCUS	n D	DELICIAS	3/0	DINSLALE DINURA	B B/C	CRAGSTUN CRAIN	C U	ŁAD	С
CANA	В	DELL	c	CINZER	В	CKAKE	В	EAGAR	ē
PANHURY	c	DELLEKER	e	CICXICE	С	CRANYUN	В	EAGLECONE	В
DANEY		CELLC	A/C	LICUE	В	CRAPER	C	EAKIN	В
DANDH F A DANCR IDGc	C D	DELLROSE DELM	E E	DISAUTEL	Б 8	DRESCEN DRESSLEK	E C	EAMES EARLE	B C
DANCHERG	0	CELMAR	D	DISCE	в	LREWS	В	EAKLMONT	B/C
DANIELS	В	DELMITA	C	CISHNER	C	CRIFTON	C	EARR	а
CANKEL CAME EY	n (DELMONT GELNOSTE	4	CISTERHEFF CITCHCAMP	C C	CRIGES CRUM	e C	HASLEY HAST FORK	ů C
DANNEMURA	Ď	OELRHI	В	CIVERS	В	CRUMMER	8	EAST LAKE	A
DANSKIN	ö	DELPHILL	c	CIVICE	ь	CRUMMEND	C	EASTLAND	C
DANT DANVERS	ŋ	DELPIEDRA	C	XIX	A	CHURY	В	EASTON	C
DAMAILTE	C C	DELRINE DELRAY	C A/D	DIXIF	A C	CRYBURG	С В	EASTCHVILLE EAST PARK	A D
	NOTES			SOIL GROUP INDIC	-		_		
		TWO SOIL GPO	UPS SU	CH AS B/C INDICAT	FS TH	E DPAINED/INDPA	INEL SI	TX-	

					_		_		_
EASTPORT	Α	ELLISCN	В	FSMCND	B	FARNUM	В	FLEISCHMANN	D
EATONTUWN		ELLOAM	C	ESPARTO	в	FAKRAGUT	c	FLEMING	С
EAUGALLIE	8/0	ELLSBERRY		ESPIL	D	FARRAR	в	FLETCHER	В
EBA	C	ELLSWORTH	c	ESPINAL	Α	FARRELL	В	FLOKE	D
EBHFKT	D	ELMA	В	ESCLATZEL	в	FARKENBURG	В	FLOP	C
EBHS	н	FLPDALE	e	ESS	В	FARROT	C	FLOMATION	A
EBENEZIF	C	ELMIRA	Α	ESSEN	C	FARSCN	В	FLORENCE	C
FCCLES	В	ELPO	С	ESSEX	C	FARWELL	C	FLORIDANA	0/0
ECHARD	С	ELMONT	е	ESSEXVILLE	D	FATIMA	в	FLURISSANT	С
ECHLER	В	ELMORE	в	LSTACADO	В	FATTIG	Ċ	FLOWELL	Č
FCKLEY	6	ELMWOOD	č	ESTELLINE	В	FAUNCE	A	FLOWEREE	В
ECKMAN	В	ELNORA	B	ESTER	O	FAUQUIER	C	FLOYD	В
ECKRANT	D	ELOIKA	В	ESTERBROOK	В	FAWCETT	č	FLUSHING	-
ECTOR	č	ELPAN	Ö	ESTHERVILLE	В	FAWN	в	FLUVANNA	С
EDALGO	č	EL PECO	č	ESTU	č	FAXCN	Ö	FLYGARE	В
EDDS	В	EL RANCHU	В	ESTRELLA	в	FAYAL	č	FLYNN	Ď
EDDY	č	ELRED	8/0	ETHAN	В	FAYETTE	в	FOARO	Ö
					В		В	FOGELSVILLE	
EDEN	C	ELRED	8/0	ETHETE	Č	FAYETTEVILLE FAYWCCD			В
EDENTUN	C	FLS	A	ETHRIDGE			C	FOLA	В
EDENVALE	D	ELSAH	В	ETIL	A	FE	0	FOLEY	0
EDGAR	В	ELSINBORU	В	ETNA		FEDORA	8	FONDA	0
EDGECUMBE	в	ELSMERE	A	ETCWAH	8	FELDA	B/D	FONCIS	C
EDGELEY	C	EL SO	0	ETCWN	В	FELIDA	В	FONTAL	C
EDGEMUNT	В	EL SCLYO	C	ETTA	C	FELLOWSHIP	D	FONTREEN	0
EDGE₩ATFR	C	ELSTON	в	ETTER	В	FELT	В	FOP TANC	D
EDGEWICK	в	ELTOPIA	P	ETTERSBURG	В	FELTA	C	FORBES	В
E DGE WUUN	Α	ELTREE	В	ETTRICK	D	FELTPAM	A	FORC	D
EDGINGTUN	C	ELTSAC	D	EARVKZ	в	FELTGN	В	FORONEY	A
EDINA	D	ELWHA	в	EUDDRA	в	FELTUNIA	В	FORDVILLE	В
EDINBUKG	C	ELWOCD	C	EUFAULA	Α	FENCE	В	FORE	D
EDISON	В	ELY	в	EUREKA	D	FENDALL	C	FORELAND	C
EDISTO	C	ELYSIAN	в	FUSTIS	A	FENWOOD	в	FORELLE	0
EOITH	Α	ELZINGA	в	EUTAW	0	FERDELFORD	С	FCRESMAN	В
EDLUE	в	EMBDEN	в	EVANGEL INE	С	FERDIG	Ċ	FORESTDALE	D
EDMONDS	c	EMDENT	č	EVANS	B	FERGUS	e	FORESTER	c
EDMURF.	D	EMER	č	EVANSTON	0	FERGUSON	в	FORGAY	A
E DMUND -	č	EMERALD	В	EVARG	Ā	FERNANDG	č	FORMAN	В
EDNA	D	EMERSON	В	EVART	õ	FERNDALE	В	FORNEY	Ö
EDNEYVILLE	В	EMI DA	Ď	EVENDALE	U	FERNLEY	č	FORREST	Č
EDUM	č	EMIGRANT	В	EVERETT	в	FERNOW	В	FORSEY	č
EDSON	č	EMIGRATION	0	EVERGLADES	A/D	FERNPOINT	č	FORSGREN	č
EDWARDS	8/0		8		8	FERRELO			В
		EMILY		EVERLY			В	FORT COLLINS	Č
FFL	c	EMLIN	В	EVERMAN	c	FERRIS	0	FORT DRUM	
EFFINGTON	D	EMMA	c	EVERSON	c	FERRON	В	FORT LYDN	В
FFWUN	A	EMMERT	A	LVESBORC	A	FERTALINE	D	FORT MEADE	A
EGAM	C	FMMET	В	EWA	В	FESTINA	В	FORT MOTT	A
EGAN	В	EMMCNS	C	EWAIL	A	FETTIC	D	FORT PIERCE	C
EGBERT	B/C	EMCRY	В	EWINGSVILLE	в	FIANDER	c	FORT ROCK	C
EGEL AND	В	EMPE Y	в	EXCHEQUER	D	FIBEA	C	FORTUNA	0
EGGLESTON	В	EMPEYVILLE	Ĺ	EXETER	C	FIDALGO	C	FORTHINGATE	C
E GNAR	C	EMPIRE	c	FXLINE	C	FIDDLETUWN	c	FORWARD	C
EICKS	C	EMRICK	в	EXRAY	D	FIDCYMENT	C	FOSHOME	В
EIFORT		ENCE	в	E XUM	C	FIELDING	В	FOSSUM	В
EKAH	C	ENC IFRRC	D	EYERBCW	D	FIELDCN	в	FOSTER	B/C
EKALAKA	В	ENCINA	в	EYRE	В	FIELDSON	A	FOSTORIA	8
ELAM	Α	ENDERS	С			FIFE	в	FOUNTAIN	0
ELBERT	D	ENDICOTT	9	FABIUS	в	FIFER	D	FOURLOG	0
ELBURN	В	ENET	В	FACEVILLE	в	FILLMORE	D	FOURPILE	В
ELCO	в	ENFIELD	в	FAFFY	в	FINCASTLE	c	FOUR STAR	B/C
ELD	В	ENGLE	Ĥ	FAIM	č	FINGAL	č	FOUTS	В
ELDEM	В	FNGLESIDE	в	FAINES	A	FINLEY	В	FOX	В
ELDER HULLOW	D	SNGL EHODD	c	FAIRBANKS	В	FIRESTEEL	В	FOXCREEK	č
FLDERON	в	ENGLUND	Ö	FAIRCALE	В	FIRGRELL	В	FOXPCUNT	c
ELOON	В	ENNIS	в	FAIRFAX	в	FIRMAGE	В	FOXCL	Ď
ELCORADU	c	ENTICHVILLE	8/0	FAIRFIELD	B	FIRC	č	FGXPARK	В
ELDKIDGE	č	ENOLA	в	FAIRHAVEN	В	FIRTH	в	FOXTON	č
ELEPHANT	D	ENCN	č	FAIRPCUNT	ő	FISH CREEK	В	FRAILEY	č
ELEKTY	8	ENDS	в	FAIRPORT	č	FISHERS	8	FRAM	В
ELFRIDA	6	ENCSBURG	D	FAJARDC	Č	FISHECOK	Ď	FRANCIS	A
ELIJAH	č	ENSIGN	a	FALAYA	Č	FISHKILL	U	FRANK	ô
FLIGAK	č	ENSLEY	C	FALCON	č	FITCH	Α	FRANKFORT	0
ELK	В	ENSTROM	В	FALFURR IAS	Ā	FITCHVILLE	ĉ	FRANKIRK	č
FLKADER	В	ENTERPRISE	В	FALK	B	FITZGERALD	В	FRANKLIN	В
FLKCRFEK	Č	FNTIAT	0	FALKNER	Č	FITZHUGH	В	FRANKSTCWN	В
STK HOFFOM	В	ENUMCLAW	€	FALL	В	FIVE DUT	В	FRANKTCWN	D
	-								
ELKHORN	R D	EPHRAIM	C	FALLBROCK	В	FIVEMILE	В	FRANKVILLE	В
ELKINS	В	EPHRATA	В	FALLCN	С	FIVES	В	FRATERNIDAD	0
ELKINSVILLE	C	EPOUFETTE	Ü	FALLSBURG		FLAGE	В	FRAZER	C
ELKMOUND		EPPING	0	FALLSINGTON	0	FLAGSTAFF	C	FRED	C
FLK MCUNTAIN	В	EPSIE	C	FANCHER	c	FLAK	В	FREDENSBORG	C
ELKTON	D	FRA	В	FANG	C	FLAMING	В	FREDERICK	В
ELLABFLLE	B/D	ERAM .	C	FARRIN	В	FLAMINGO	D	FREDON	C
ELLEGGE	U	ERBER	C	FANNC	c	FLANAGAN	в	FRECONIA	C
ELLERY	0	ERIC	8	FANU	c	FLANCREAU	В	FREDRICKSON	C
ELLETT	D	ERIE	C	FARACAY	C	FLASHER	A	FREEBURG	C
ELLIBER	Δ	EKIN	В	FARALLONE	в	FLATHEAD	Α	FREECE	D
ELLICOTT	Δ	ERNEST	C	FARAWAY	D	FLAT HORN	В	FREEHOLD	В
FLLINGTON	В	ERKAPOUSPE	C	FARCC	0	FLATICP	D	FREEL	8
FLLINOR	в	ESCAL	в	FARISTA	в	FLAXTON	A	FREEMAN	С
FLLIOTT	C	ESCALANTE	в	FARLAND	в	FLEAK	A	FREEMANVILLE	В
FLLIS	D	ESCAMBIA	C	FARMINGTON	C/D	FLECHADO	c	FREEDN	в
ELLISFORDE	C	ESCONDIDO	C	FARNUF	в	FLEETWOOD		FREER	C
	NOTES	A BLANK HW	20010016	COLL CROUP II	10101776	T		DEEN DETERMINED	

NOTES A BLANK MYDROLOGIC SOIL OPOUR INDICATES THE SOIL CROUP HAS NOT BEEN DETERMINED TWO SOIL CROUPS SUCH AS R/C INDICATES THE DRAINED/UNDRAINED SITUATION

FREEDING										
PRENCH			GASCCNADE GAS CREEK							
PARTICIPATION C	FREMONT	c	GASKELL	c	GLENHALL	В	GRANILE	В	CUR ABO	0
FREEDOW C GATESOURG A GLENDALEN C GAMISSURG C GUISTIN C				_						
FRIANA	FRENEAU		GATE SBURG	A	GLENNALLEN	C	GRANTSBURG	C	GUSTIN	С
FRIDUATION C GATEMODO D GLESTED D CRAFFUL C GWIN D										
FRIES D CAYINS C CLEWIEW B GASSNA B CYPER C C FRIEZELL C GASSNA BUT B CLEWICK C GASSNA BUT B FRIES D CAYING D CLEWILLE C GASSNA BUT B FRIES C C FRIEZELL C C GAYLORO B CLEWA B GASSNA BUT B FRIES B GASSNA B										
FALLES D GAVIOTA D CLEWILLE C CASASSY BUTTE A FALLES D GAVIOR C CLUE B GAVIEN C HALCERO C FADRISC D GAVROR C CLUE C CANTEN C HALCERO C FADRISC D GAVROR C CLUE C CANTEN C CANTEN C FADRISC C GAVILLE C CANTEN C CANTEN C FADRISC C GAVILLE C CLUE C CANTEN C FADRISC C GAVILLE C CANTEN C CANTEN C FADRISC C GAVILLE C CANTEN C CANTEN C FADRISC C CATALOX C CANTEN C CANTEN C FAULIA C CATALOX C CANTEN C CANTEN C FAULIA C CATALOX C CATALOX C CANTEN C FAULIA C CATALOX C CATALOX C CANTEN C FAULIA C CATALOX C CATALOX C CATALOX C CATALOX C FAULIA C CATALOX										
FRIU									GYMER	C
FADDRIAN C GAYVOR C GLERIA C GAAVE B MACK B FADDRIAN C GAVILLE A GLOUESTER A GARVILLE B FADDRION C GAZVILLE B GLOUESTER A GARVILLE C MACKES B FADDRION C GAZVILLE B GLOUESTER A GARVILLE C MACKES B FADDRION C GAZVILLE B GAZVILLE C MADOLE S FADDRION C GAZVILLE C MADOLE S FADDRION C GAZVILLE C MADOLE S FADDRION C GAZVILLE C GAZVILLE C MADOLE S FADDRION C GAZVILLE	FRIO	В	GAY	0	GLIDE	В	GRATZ	С		
FADIMAN C										
FROSTION O										
FACEST										
FAUITIAN										
FAYE		_								
FUERDO										
FULDAY FULDAY										
FULHER ON	FUERA	С								В
FULISHER										
FULTON D GENESEE B GCCEBIC B GREENFIELD B HALLAN B FURTIS BYO GENOA D GCLCCADA D GCERTAGAN D HALLAN B FURTIS BYO GENOA D GCLCCADA D GREENLAP B HALLAN B FURTIS BYO GENOA D GCLCCADA D GREENLAP B HALLAN B FURTIS BYO GENOA D GCLCCADA D GREENLAP B HALLAN B GABALON C GENGEVILLE B GCLCFILL B GREEN RIVER B HALLEN C GABALON C GERALD D GCLDWAN C GREENBOON C HALLEY GCABALON C GREEN RIVER B GABLON C GERRER D GCLDWAN C GREENBOON C HALEY C GABLON C GERRER D GCLDWAN C GREENBOON C HALEY C GABLON C GERMANIA C GCLOWAN C GREENBOON C HALEY C GADSOS G GERLAND C GOLDSTON C GREENBOON C HALEY C GADSOS G GERLAND C GOLDSTON C GREENWILE A HALFOND B GACEGY G GERMANIA GULCSTREAM G GREENWILE A HALFOND B GACEGY G GERMANIA GULCSTREAM G GREENWICH B GACEGY G GERMANIA G GCLUVEIN C GREENWICH B GACEGY G GERMANIA G GCLUVEIN C GREENWICH G GALONE G GCSTATIN G GCLUVEIN C GREENWICH G GAINES C GEYSEN C GOLLAMER A GREENWICH B GALORI GREENWICH G GREENWICH G GREENWICH G GALORI G GREENWICH G		_								
FUDUALY R										
FUBNIS										
GEORGEY LILE B GCLF IELD B GREENPORT HALCER C GASTRA- C GORGIA B GCLFILL B GREEN RIVER B HALE B GASTRA- C GORGIA B GCLFILL B GREEN RIVER B HALE B GASTRA- C GREENSGROU C HALE INA B GLEEN GASTRA- C GREEN GASTRA- C GREEN GASTRA- C GREEN GASTRA- C GA	FURNIS	B/D	GENOA	D	GULCCADA	D	GREENLEAF	В	HAIRE	C
CABALDON C GERALD D GCLUPAN C GREEN SURVER B MALE B GABALDON C GAB	FURY	8/D						С		
GABLE D GERIG D GELORIDO B GREENTON C MALEY B GACEY CACEY D GERIG B GULDRUM A GREENTON C MALEY MALEY B GADES C GENING B GULDSTON C GREENTON C MALE MORO B GADES G GENIAND C GULDSTON C GREENTLE B MALEDRO A GADES G GENIAND C GULDSTON C GREENALTER B MALEDRO A GADES G GENIAND C GULDSTON C GREENALTER B MALEDRO A GADES G GENIAND C GULDSTON C GREENALTER B MALEDRO A GADES G GENIAND C GULDSTON C GREENALTER B MALEDRO A GADES G GENIAND C GULDSTON C GREENALTER B MALEDRO A GADES G G GENIAND C GREENALTER B MALEDRO A	GAASTRA.	С						В		
GADES C GERIAM B GOLDRUM A GREENTON C MALF MOCN B GADES C GERIAMO C GOLDSTON C GREENVILLE B MALFORD A A GABES G GERIAMO C GOLDSTON C GREENVILLE B MALFORD A A GABES G GERMANT C GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GERMANT C GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GOLDSTON C GREENWITER A MALF MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GOLDSTON C GREENWILL B MALF MOCN D GABES G GALE MOCN D GABES G GABES G GALE MOCN D GABES G GALE MOCN D GABES G GALE MOCN D GABES G GABES G GALE MALF MOCN D GABES G GABES G GALE MALF MOCN D GABES G								_		
GADDE'S C GEPLING B COLDSTON C GREENVILLE B HALFORD A GADES G GERLAND C GOLDSTON C GREENVILLE B HALFIFAY D GADSOEN D GERMANTA GULCSTREAM D GREENVICH B HALFI B GACE G GERMANY B GOLCVAILE C GREEN C HALFS GACE G GERMANY B GOLCVAILE C GREEN C HALFS GACE G GERMANY B GOLCVAILE C GREEN C HALFS GACE G GERMANY B GOLCVAILE C GREEN C HALFS GACE G GERMANY B GOLCVAILE C GREEN C HALFS GARGE B GETTYS C GOLLAWER A GREEN C HALLS GARGE B GETTYS C GOLLAWER A GREEN C HALLS GAINES C GEYSEN D GOLLAWER A GREEN C HALLS GAINES C GEYSEN D GOLLAWER A GREEN C HALLS GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAINES C GEYSEN D GOLLAWER A GREEN C HALLSCK B GAILE B G GIBBLER C CUCCH D GREEN C HALLSCK B GALEAR B G GIBBLER C CUCCH D GREEN C HALLSCK B GALEAR B G GIBBLER C CUCCH D GREEN C HARBOR B GALESTOWN A GIFFERD C COCCMAN B GREEN C HARBOR B GALESTOWN A GIFFERD C COCCMAN B GREEN C COCCMAN B GREYCLIFF C HARBLE C GALEAR B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGER B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGER B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGER B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GILCHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GLICHRIST B GOOSE CREEK B GRISSION B HARBLE C GALLAGE B GRISSI										
GADSOEN D GERMANIA GULCSTREAM D CREENBUCH B HALII B B GAGE GAGE GAGE GAGE GAGE GAGE GAGE										A
GAGE GFRMANY B GGLCVAIE C GREENDOL C MALITMAILE B GAGEOTOMN C GESTAIN B GCLUVEIN C GREER C MALIS B GAUGETOMN C GESTAIN B GCLUVEIN C GREER C MALIS B GAUGETOMN C GESTAIN C GCLIAD C GREGORY A MALLECK B GAINES C GEYSEN D GCREZ B GRENADA C MALLECK B GAINES C GEYSEN D GCREZ B GRENADA C MALLECK B GAINES C GEYSEN D GCREZ B GRENADA C MALLECK B GAINESTILLE A GHENT C GCONVICK B GPENVILLE B GALEATA D GIRBLER C GUCCH D GRESHARK C MALSCUARDRO GALE B GIRBLER C GUCCH C GRESHARK C MALSCUARDRO GALE B GIRBLER C GUCCH C GRESHARK C MARACADRO GALEAN C GIRBSTOWN A GUCCLOE C GRESHARK C MARACADRO GALEAN C GIRBSTOWN A GUCCLOE B GREVELIFF C MARACADRO GALESTOWN A GIFFORD C GOLOMAN B GREVELIFF C MARACADRO GALESTOWN A GIFFORD C COLOMAN B GRIFFY B MARBIENT D GALLAGOR B GILCHRIST B GOOSE CREEK B GRISSTOM B MARBURG B GALLAGOR B GILCHRIST B GOOSE CREEK B GRISSTOM B MARBURG B GALLATIN A GILCREST B GOOSE CREEK B GRIZZLY C MAMELT C GALLATIN A GILCREST B GOOSE CREEK B GRIZZLY C MAMELT C GALLATIN A GILCREST B GOOSE CREEK B GRIZZLY C MAMELT C GALLATIN A GILCREST B GOOSE CREEK B GRIZZLY C MAMELT C GALLION B GILFORD R/D GUCRE D GROSECLOSE C MARPET C GANNETT D GILLS B GCRED C GROGAM B MARCHY C GANNETT D GILLAGOR B GRIZZLY C MAMELT B GALLATIN C GILFER C GUCRE D GROSECLOSE C MARPET C GANNETT D GILLAGOR C GRADAT C GROSEN C MARTAH C GARNET D GILLAGOR C GRADAT C GROSEN C MARTAH C GARNET D GILLAGOR C GRADAT C GRADAT C GARNET D GILLAGOR C GRADAT C GRADAT C GARRET D GLANDER C GUANAM D MANACA C GARRET D				С						
GAGEBY GAGETOMN C GATEA C GAUTIA C GA		U		ь						
GAIRES C GEYSEN D CORREZ B GRENADA C MALLERCK B GAINES C GEYSEN D CORREZ B GRENADA C MALL RANCH C C GAINESYILLE A GHENT C GCNYICK B GRENADA C MALL RANCH C GALATA D GIBBLER C CUCCH D GRESHAM C MALSEY D GALATA D GIBBLER C CUCCH D GRESHAM C MALSEY D GALATA D GIBBLER C CUCCH D GRESHAM C MALSEY D GALEN B GIBBS D GGCCALE C GREYBACK B MARAVAPORO B GALEN B GIBBS D GCCDING C GREYBACK B MARAVAPORO B GALEN B GIBBS D GCCDING C GREYBACK B MARAN B GALEPPI C GIFF IN C GCCDILOM B GREYCLIFF C MARAN B GALEPPI C GIFF IN C GCCDILOM B GREYCLIFF C MARAN B GALEPPI C GIFF IN C GCCDILOM B GREYCLIFF C MARAN B GALEPPI C GIFF IN C GCCDILOM B GREYCLIFF C MARAN B GALEPPI C GIFF IN C GCCDILOM B GRIDSTON B MARBER C GALESTOWN A GIFFORD C GCCDILOM B GRIDSTON B MARBER C GALLACHER B GILCHISTS B GCGS LAKE C GRIVER B MARBER C GALLACHER B GILCHISTS B GCGS LAKE C GRIVER B MARBER C GALLACHER B GILCHISTS B GCGS LAKE C GRIVER C MAMLET B GALLION B GILCHISTS B GCGS LAKE C GRIVER C MAMLET B GALLION B GILCHISTS B GCGS LAKE C GRIVER C MAMLET B GALLION B GILCHISTS B GCGS LAKE C GRIVER C MAMLET B GALLION B GILCHISTS B GCGS LAKE C GRIVER C MAMLET B GALLION B GILCHISTS B GCGS LAKE C GROWN B MAMILTON B GALLION B GILCHISTS B GCGCC C GROGAN B MAMILTON B GALLION B GILCHISTS B GCGCC C GROGAN B MAMILTON B GALLION B GILCHISTS B GCGCC C GROGAN B MAMILTON B GALLION B GILCHISTS B GCRCO C GROGAN B MAMILTON B GALLION B GILCHISTS B GCRCO C GROGAN B MAMILTON B GALLION B GILCHISTS B GCRCO C GROGAN B MAMILTON B GALLION B GALLOW B GCRCO C GROGAN B MAMILTON B GALLOW B GALLOW B GCRCO C GROGAN B MAMILTON B GALLOW B GALLOW B GCRCO C GROGAN B MAMILTON B GALLOW				В		C		С		В
GAINES C GEYSEN D GCMEZ B GRENDA C MALL RANCH C GAINESVILLE A GHENT C GCNVICK B GFENTHLE B HALLVILLE B GALATA D GIBBLER C CUCCH D GFESHAM C HALSEY D GALE B CIBBGN B GGCCALE C GRENDAGK C HANSKUPOND B GALEN B GIBBS D GCCDING C GREYBACK B HANNAN B GALEPH C GIBBSTOWN A GUCCINGTON C GREYBUL C HANNAN B GALEPH C GIBBSTOWN A GUCCINGTON C GREYBUL C HANNAN B GALEPH C GIBBSTOWN A GUCCINGTON C GREYBUL C HANNAN B GALEPH C GGERT B GUCCH B GREYCLIFF C HANNBLEN C GALESTOWN A GIFFCRD C COOCMAN B GREYCLIFF C HANBER C GALESTOWN A GIFFCRD C COCCMAN B GRISTON B HANBORG B GALEY B GILA C GCCGRICH B GAILSTON B HANBORG B GALESTOWN B GILAY B GCCUSPRINGS D GRINSTAD B HANBORG B GALLATIN A GILCREST B GOOSE CAREEK B GRISWICL B HANBER C C GALLATIN A GILCREST B GOOSE CAREEK B GRISWICL B HANBERLY C GALLATIN A GILCREST B GOOSE CAREEK B GRIZZLY C HANBLET B GALLINO B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILCREST B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GILES B GOOSE CAREEK B GRIZZLY C HANBLET B GALLATIN C GOORD C GROCAN B HANNAN A GALLATIN C GOORD C GROCAN B HANNAN A GALLATIN C GILLSDIE C GOORD C GROCAN B HANNAN B GALLATIN C GOORD C GROCAN B HANNAN A GALLATIN C GOORD C GROCAN B HANNAN A GALLATIN C GOORD C GROCAN B HANNAN A GALLATIN C GOORD C GROCAN B GALLATIN C GOORD C										
GAILESVILLE A GHENT C GOLVECK B GRENTILLE B HALLVILLE B GALATA D GIEBBLER C GUCCH D GRESHAM C HALSEY D GALE B CIBBON B GGCCALE C GRENTACK C HANKUPOND B GALEN B GIBBS D GCDDING C GREYBLK B HANKUPOND B GALEN B GIBBS D GCDDING C GREYBLK B HANKUPOND B GALEN B GIBBS D GCDDING C GREYBLK B HANKUPOND B GALEN C GIFFIN C GCDDLCW B GREYBLL C HANKE B GALEN C GIFFIN C GCDDLCW B GREYBLL C HANKE B GALESTOWN A GUCCINGTON C GREYBUL C HANKE B GALESTOWN B GILE C GCDRICK B GALESTOWN B HANBRIGKT D GALESTOWN B GILE C GCDRICK B GALESTOWN B GALESTO										
GALEN B CIBBÓN B GCCALE C GRENINGK C HAMARUAPORO B GALENA C GIBSTOWN A GUCCINGTON C GREYBULL C HAMAR B GALENA C GIBSTOWN A GUCCINGTON C GREYBULL C HAMAR B GALENA C GIFFIN C GCCOLCM B GREYELIFF C HAMBLEN C GALESTOWN A GIFFORD C GOODMAN B GRIFFY B HAMBLEN C GALESTOWN A GIFFORD C GOODMAN B GRIFFY B HAMBLEN C GALEY B GILA C GCCGRICH B GRIFFY B HAMBLEN C GALEY B GILA C GCCGRICH B GRIFFY B HAMBLEN C GALEY B GILA C GCCGRICH B GRIFFY B HAMBLEN C GALLAGHER B GILCHRIST B GOOSE CREEK B GRISWOLC B HAMBLY C GALLAGHER B GILCREST B GOOSE LAKE C GRIVER C HAMILTON A GALLAGON B GILEAU C GGGSMUS B GRIZZLY C HAMLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILES B GRACO C GROGAN B HAMBLET B GALLINA C GILLS C GRACO C GROGAN B HAMBLET B GALLINA C GILLS C GRACO C GROGAN B HAMBLET B GALLINA C GILLS C GRACO C GROGAN B HAMBLET B GALLINA C GILLS C GRACO C GROGAN B HAMBLET C GANNER A GILLIAM C GCRIN C GROVE A HAMPSHIRE C GANNER A GRACS C HAMPSHIRE C GANNER A GRACS C HAMPSHIRE C GANNER D GILLIAM C GCRIN C GROVE A HAMPSHIRE C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GANNER D GILLIAM C GCRIN C GROVE B HAMALET C GANNER D GA	GAINESVILLE	A	GHENT	c	GCNVICK	В	GRENVILLE	В	HALLVILLE	В
GALENA C GIBSSTOWN A GUCCINGON C GREYBACK B HAMAN B GALEPI C GIBSSTOWN A GUCCINGTON C GREYBUL C HAMAR B GALEPI C GIFFIN C GCOLCM B GREYCLIFF C HAMBLEN C GALESTOWN A GIFFGAD C GOCCOLCM B GREYCLIFF C HAMBLEN C GALESTOWN A GIFFGAD C GOCCOLCM B GREYCLIFF C HAMBLEN C GALESTOWN B GILA C GCCOLCM B GREYCLIFF C HAMBLEN C GALESTOWN B GILA C GCCOLCM B GRIGSTOWN B HAMBIGGT D GALEY B GILA C GCCOLCM B GRIGSTOWN B HAMBLEG B GALISTED D GILBY B GCCOSPRINGS D GRIPSTAG B HAMEL C GALLAGHER B GILCHRIST B GOOSE CREEK B GRISWCLC B HAMEL C C GALLATIN A GILCREST B GOOSE CREEK B GRISWCLC B HAMEL C C GALLATIN A GILCREST B GOOSE CREEK B GRISWCLC B HAMEL C C GALLATIN A GILCREST B GOOSE CREEK B GRISWCLC C HAMILTON A GALLION C GLES B GCCCO C GROGAN B HAMLIN B GALLION B GILFORD B GCCOCOLC GROGAN B HAMLIN B GALLION B GILFORD B GCCCOLC C GROGAN B HAMLIN B GALLION B GILFORD B GCCCOLC C GROGAN B HAMLIN B GALLION B GILFORD B GCCCOLC C GROGAN B HAMLIN B GALLOW B GILHOULY B GCCCOLC C GROGAN B HAMLIN B GALLOW B GILHOULY B GCCCOLC C GROGAN B HAMLIN B GALLOW B GILHOULY B GCCCOLC C GROGAN B HAMLIN B GALLOW B GLOW B GROSECLOSE C HAMPSHIRE C GALVYN B GILHOULY B GCCCOLC C GROWE A HAMTAM C C GALVYN C GROVE A HAMPSHIRE C GALVYN B GROVE B HAMALEI C GANNETT D GILLS C GCRPAN B GRUVE B HAMALEI C GANNETT D GILLS C GCRPAN B GRUVER B HAMALEI C GANNETT D GILLS C GCRPAN B GRUVER B HAMALEI C GANNETT D GILLS C GCRPAN B GRUVER B HAMALEI C GANNER D GRUVER B GRUBS D HAMCEVILLE B GARDBS D HAMCEVILLE B GARDBOR D HAMCEVILLE B GARA										
GALEPTOM A GIFFORD C GCCDLCM B GREVCLIFF C HAMBLEN C GALESTOWN A GIFFORD C C COODMAN B GRIFSY B HAMBRIGHT O GALEY B GILA C GCCCRICH B GRISSTON B HAMBURG B GALISTED O GILBY B GCCOSPRINGS O GRIPSTAG B HAMBURG C GALISTED O GILBY B GCCOSPRINGS O GRIPSTAG B HAMBURG C GALLAGHER B GILCHRIST B GOOSE CREEK B GKISWCLC B HAMBRICHT C GALLAGHER B GILCHRIST B GOOSE CREEK C GRIVER C HAMILTON A GILCREST B GOOSE LAKE C GRIVER C HAMILTON A GALLIGOS B GILEAU C GGGSMUS B GRIZZLY C HAMBLET B GALLION C GILES B GRECO C GROGAN B HAMLIN B GALLION B GILFORD R/O GREE D GROGAN B HAMLIN B GALLION B GILFORD R/O GREE D GROGAN B HAMILTON B GLALY B GCKGCNIC A GROSS C HAMPDEN CALVA B GILHOULY B GCKGCNIC A GROSS C HAMPSHIRE C GALVAIN C GILLIAM C GCRIN C GROWE A HAMPTON C GALVAIN C GILLIAM C GCRIN C GROWE A HAMPTON C GALVAIN C GILLIAM C GCRIN C GROWE A HAMPTON C GANBETT D GILLIGAN B GCKING C GROWE A HAMPTON C GANBETT D GILLIGAN B GCKING C GROWE B HANAL A GANBETT D GILLIGAN B GCKING C GROWE B HANAL C GANBETT D GILLIGAN B GCKING C GROWE B HANAL C GANBETT D GILLIGAN B GCKING C GROWE B HANALEI C GANBORR D GROWER B HANALEI C GARBORR B GROWER B GARBORR C GARBORR B GROWER B HANALEI C GARBORR B GROWER B GARBORR C GARBORR B GROWER B HANALEI C GARBORR B GROWER B GARBORR C C GARBORR B GROWER B HANALEI C GARBORR B GROWER C GROWER B GARBORR C C GARBORR B GARBORR C GARBORR B GARBORR C GARBORR B GARBORR C C GARBORR C C GARBORR										
GALESTOWN A GIFFCRD C CODDMAN B GRIFFY B MAMBRIGHT D										
GALEY										
GALLAGHER B GILCHRIST B GOOSE CREEK B GRISWCLC B HAMERLY C CALLATIN A GILCREST B GOOSE LAKE C GRIVER C HAMILTON A GALLIGOS B GILEAU C GGGSHUS B GRIZZLY C HAMILTON A GALLIGOS B GILEAU C GGGSHUS B GRIZZLY C HAMILTON B GALLIAN C GILES B GRECO C GROGAN B HAMILIN B GALLIAN B GILFCRD PLD GREE D GROGAN B HAMILIN B GRAIN B GILFCRD PLD GREE D GROGAN B HAMILIN B GRAIN B GILFCRD PLD GREE D GROGAN B HAMILIN B GRAIN B GLECOSE C HAMPOEN C GALVIN B GLECOSE C HAMPOEN C GALVIN B GLECOSE C C HAMPOEN C GALVIN B GLECOSE C C HAMPOEN C GALVIN B GREGORIC A GREE C GROVE A HAMPSTIRE C GALVIN C GILLIAM C GCRING C GROVE A HAMPSTIRE C GANNEER A GILLIGAN B GOMING C GROVE A HAMPTON C GANNEER A GILLIGAN B GOMING C GROVE A HAMPTON C GANNEER D GILLOGAN B GOMING C GROVE B HAMAL A GANNEER D GILLOGAN B GOMING C GROVE B HAMAL C GANNEER D GILLOGAN B GOMING C GROVE B HAMAL C GANNEER D GILLOGAN B GOMING C GROVE B HAMAL C GANNEER D GILLOGAN B GOMING C GROVE B HAMAL C GANNEER D GROVER B HAMAL C GANNEER D GROVER B HAMAL C GANNEER D GROVER B HAMAL C C GONTEN B GROVER B HAMAL C C GANNEER D GROVER B GROVER B HAMAL C C GANNEER D GROVER B GROVER C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C C GOTTHAM A CRUVER C HAMACAD C GARCENO C GINGER C C GOTTHAM A CRUVER C HAMACAD C GARCENO C GARCENO C GARCENO D GARCENO D GARCENO C GARCENO D GARCENO D GARCENO D GARCENO C GARCENO D										
GALLIATIN À CILCREST B GOGSELAKE C GRIVER C HAMLETCN À GALLICOS B GILFAU C GGGSMUS B GRIZZLY C HAMLET B B GALLINA C GILES B GCRED C GROGAN B HAMLIN B GALLINA C GILES B GCRED C GROGAN B HAMLIN B GALLION B GILFCRD R/D GCRE D GROGAN B HAMLIN B GALLION B GILFCRD R/D GCRE D GROGAN B HAMLIN B GALLION B GILFCRD R/D GCRE D GROGAN B HAMLIN B GALLION C GLIVAL B GCRED C GROGAN B HAMPDEN C GALVA B GILFCRD R/D GCRED C GROGAN B HAMPDEN C GALVA B GILFCRD R/D GCRED C GROGAN B HAMPDEN C GALVA B GILFCRD R/D GCRED R/D GCRED C GROGAN B GROCK C GROVE A HAMPTICN C GANGLER A GILLIAM B GCRING C GROVE A HAMPTICN C GANGLER A GROVER B HAMALEI C GRANETT D GILLS C GCRMAN B GROVER B HAMALEI C GANSVER D GILMGRE D GCREAN B GROVER B HAMALEI C GANSVER D GILMGRE D GCREAN B GROVER B HAMALEI C GASSVER D GILMGRE D GCREAN B GROVER B HAMALEI C GASSVER D GILLS C GCREAN B GROVER B HAMALEI C GASSVER D GILLS C GCREAN B GROVER B HAMALEI C GASSVER D GILLS C GCREAN B GRUVER D HAMCEVILLE B GAPPMAYER B GILRCY C GOSTER B GRUVER D HAMCEVILLE B GARDAN B GROVER B HAMALEI C GASSVER B GROVER C GARCIEN B GROVER B GROVER B GROVER C CARTILLE B GROVER B GROVER C C GARDAL B GROVER C C GRANTH B GULVARNA D HANS C CARRETON B GLENDRU C C GRANTH B GULVARNA D HANS C CARRETON B GLENDRU D GRANTH B GULVARNA H HARCEMAN B GARRETON B GLENDRU C C GRANTH B GULVARNA H										
GALLIOS B GILEAU C GGGSMUS B GRIZZLY C HAMEET B GALLINA C GILES B GGREO C GROGAN B HAMEIN B GALLION B GILFCRD R/D GLRE D GRGSECLOSE C HAMPDEN GALVA B GILFCRD R/D GLRE D GRGSECLOSE C HAMPDEN C GALVESTUN A GILLSPIE C GCRHAM B GRUTCN A HAMPTICN C GALVESTUN A GILLSPIE C GCRHAM B GRUTCN A HAMPTICN C GALVESTUN A GILLSPIE C GCRHAM B GRUTCN A HAMPTICN C GAMBLER A GILLIGAN B GORING C GRCVELAND B HANNA A GANNETT D GILLS C GCRMAN B GRUTCN B HANNA A GANNETT D GILLS C GCRMAN B GRUTCN B HANNAWILU A GANNETT D GILLS C GCRMAN B GRUYCR B HANNAWILU A GAPD D GILPIN C GOSTELL B GRUDGS D HANCEVILLE B GARDER B GILRCY C GOSTELL B GRUDGS D HANCEVILLE B GARDER B GILRCY C GOSTEL B GRULLA D HAND B GARDER B GILRCY C GOSTEN B GRULLA D HAND B GARDER B GILRCY C GOSTEN B GRUNCY C HANDEGAND B GARDER B GILSON B CCSHUTE D GRUNCY C HANDEGAND C GARGEND C C GOSTEL C GUADALUPE B HANNING C GARDENS FORK B GIND A GCLUDING D GALALLA D HANNINS B GARDEN ILLE D GIVEN C GOSTEL C GUADALUPE B HANNING C GARDENS FORK B GIND A GCLUDING D GALALLA D HANNINS B GARDEN L C GLAPTIC C GUADALUPE B HANNING C GARDEND A GARDEND B GARDEN L C GLAPTIC C GUADALUPE B HANNING C GARDEND B GARDEN L C GLAPTIC C GUADALUPE B HANNING C GARDEND B GARDER B GLAND B GARDER B GLAND B GARDER B GLAND B GARDER B GLAND B GARDER C C GARDEND B GARDER C C GARDEN B GUANALLO D HANNING B GARDER C C GARDEND B GARDER B GLAND B GARDER B GLAND B GARDER C C GARDEND B GARDER B GLAND B GARDER C C GARDED B GARDER C C GARDER B GA		-								
GALLION B GILFCRD P/D GCRE D GROSECLOSE C HAMPDEN GALVA B GILLOULY B GCRGCNIC A GRCSS C C HAMPSHRE C GALVESTON A GILLSPIE C GCRHAM B GRUTCN A HAMPTCN C GALVIN C GILLIAM C GCRIN C GRUVE A HAMPTCN C GANSLER A GILLIGAN B GGRING C GRCVE A HAMTAM C GANGLER A GILLIGAN B GGRING C GRCVELAND B HANA A GANGLER A GILLIGAN B GGRING C GRCVELAND B HANA A GANGLER D GLING C GREVELAND B HANALEI C GARSKER D GILLIGAN B GGRING C GRCVETLN B HANALEI C GARSNER D GILLIGAN C GORDEL B GRCVETLN B HANALEI C GANSNER D GILLIGAN B GCRUS B GRCVETLN B HANALEI C GARSNER D GILLIGAN B GCRUS B GRUVER B HANALEI C GAPPMYER B GILLIGAN B CCSHUTE D GRUVER C HANGLER B GARBER B GILLIGAN B CCSHUTE D GRUVER C HANGLER B GARBER B GILLIGAN B CCSHUTE D GRUVER C HANGLER B GARBER B GILLIGAN B CCSHUTE D GRUVER C HANGLER B GARBER B GILLIGAN B GCTHIC C GUADALUPE B HANALEY B GARDEN B GINI B GCTHIC C GUADALUPE B HANALEY B GARDINER A GINSER C GGTHC C GUADALUPE B HANNENS C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNS B GARDERVILLE D GIVEN C CCVAN C GUADALUP B HANNENS C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNS B GARDERVILLE D GIVEN C CCVAN C GUADALUP B HANNENS C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNES C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNES C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNES C GARDNERS FURK B GIND A GCCLDING D GUALALL D HANNES C GARDNERS FURK B GIADAL A GRAVE B GUANAJIBO C HANNA B GARDER B GUANAJIBO C HANNA B GARDER B GUANAJIBO C HANNA B GARDER B GUANANIBO C HANNES C GARDNER A GOVE B GUANAJIBO C HANNA B GARDER B GUANANIBO C HANNA B GARDER B GUANANIBO C HANNES C GARDER C C GARDER B GUANANIBO C HANNES C C GARDER B GUANANIBO C HANNES C C GARDER C C GARDER C C GARDER										
GALVA B GILHOULY B GCRGGNIC A GRGSS C HAMPSHIRE C GALVESTON A GILISPIE C GCRHAM B GROTCN A HAMPTCN C GALVIN C GILLIAM C GCRAMA B GROTCN A HAMPTCN C GAMBLER A GILLIGAN B GGRING C GRCVELAND B HANA A GANNETT D GILLS C GCRPAN B GROVER B HANALEI C GANSER D GILMGRE D GCRLS A GRCVETCN B HANALEI C GANSER D GILMGRE D GCRLS A GRCVETCN B HANALEI C GANSER D GILMGRE D GCRLS A GRCVETCN B HANALEI C GARSER B GILRCY C GOSTEL B GRUBBS D HANCEVILLE B GAPD D GILLS C GGREEN B GRUBBS D HANCEVILLE B GARDARRY B GILLO B GCSHTE B GRUBBS D HANCEVILLE B GARDARRY B GILLO B CCSHTE D GRUWLY C HANDGRD B GARBER R GILT EDGE C GCSPFRT C GRUNCY C HANGEY B GARDARRY B GILT EDGE C GCSPFRT C GRUNCY C HANGER B GARDARRY B GINT B GCTHAM A CRUVER C HANGARD C GARCENO C GINGER C GCTHAMP D GRYGLA C HANGARD C GARCENO C GINGER C GCTHAMP D GRYGLA C HANGARD C GARDARRY LEE D GIVEN C GGSTC C GUALDLE B HANIPOC B GARDARRY LEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LLEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LLEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LLEE D GIVEN C CCVAN C GUADALUPE B HANIPOC B GARDARRY LLEE D GIVEN C CCVAN C GUADALUPE B GUANALBO C HANNE B GARDARRY LLEE D GIVEN C CCVAN C GUADALUPE B HANIPOC C GARTIFLO C GLADHIN A GRABE B GUANALBO C HANNE C GARLET B GUANALBO C HANNE C CGARLET A GLADEN B GCHER B GUANALBO B HANS C CGARLET A GLADEN B GCHER B GUANALBO B HANS C CGARLET A GLADEN B GCHER B GUANALBO B HANS C CGARLET A GLADN B CARCEVILLE B GUBEN B HANSON A GARLET B GUANABO B HANS C CGARLET A GRADAR C C GARLET B GUANABO B HANS C CGARLET B GUANABO B HANS C C GARLET B GUANABO B GUANABO B HANS C C GARLET B GUANABO B HANS C C GARLET B GUANABO B GUANABO B GARLET B GUANABO B GARLET B GUANABO B GUANABO B GARLET B GUANABO B GUANABO B GARLET B G										В
GALVESTUN A GILISPIE C GCRHAM B GRUTCN A HAMPTCN C GALVIN C GILLIAM C GCRIN C GROVE A HAMTAH C GANBLER A GILLIGAN B GUHING C GROVER B HAMA A GANNETT D GILLS C GCRPAN B GROVER B HAMALEI C GASSER D GILLG C GCRPAN B GROVER B HAMALEI C GASSER D GILLG C GCRPAN B GROVER B HAMALEI C GASSER D GILLG C GGRZELL B GRUBS D HANCEVILLE B GAPP MAYER B GILRCY C GOSFEN B GRUBS D HANCEVILLE B GARDY C GARGER C GCSPCRT C GRUNCY C HANCEV B GARDY C GARGER C GCSPCRT C GRUNCY C HANCEV B GARDY C GARGEN D GRUPS C GOSFEN C GRUNCY C HANCEV B GARDY B GARDY C GARGEN D GRUPS C GOSFEN C GUNCY C HANCER B GARDY B GARD										С
GANBER A GILLIGAN B GOTING C GREVELAND B HANA A GANNETT D GILLS C GCRMAN B GROVER B HANALEI C GANSNER D GILMGRE D CCRLS A GREVETLN B HANALEI C GANSNER D GILMGRE D CCRLS A GREVETLN B HANALEI C GANSNER D GILMGRE D CCRLS A GREVETLN B HANALEI C GAPP B GILRCY C GOSFER B GRUBS D HANCEVILLE B GAPPMAYER B GILRCY C GOSFER B GRUBS D HANCEVILLE B GAPPMAYER B GILSON B CCSHUTE D GRUMPIT C HANDGRAD B GARBER B GILSON B CCSHUTE D GRUMPIT C HANDGRAD B GARBER B GILSON B CCSHUTE D GRUMPIT C HANDGRAD C GARBER B GILSON B CCSHUTE D GRUMPIT C HANGGRAD C GARBOUT B GARBOUT C GARDON C GINGER C GCTHAMP A CRUVER C HANGGRAD C GARBOUNA B GINI B GOTHIC C GUADALPE B HANIPODE B GARDINER A GINSER C GGTHC C GUADALPE B HANIPODE B GARDINER A GINSER C GGTHC C GUADALPE B HANIPODE B GARDINER B GIDD A GCULDING D GUALAL D HANKS C GARDONERS FORK B GIDD A GCULDING D GUALAL D HANKS C GARDONERS FORK B GIDD A GCULDING D GUALAL D HANKS C GARDONERS FORK B GIDD A GCULDING D GUALAL D HANKS C GARDONERY C GLADSTONE B GCMEN B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCMEN B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCMEN B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCMEN B GUANAJBO C HANNA B GAREY C GLADSTONE B GCMEN B GUANAJBO C HANNA B GARET C GRANIC D HANNOC C GARITA C GLADSTONE B GCMEN B GUANAJBO C HANNOC C GARITA C GLADSTONE B GCMEN B GUANAJBO C HANNOC C GARITA C GLADSTONE B GCMEN B GUANAJBO C C GRACEPONT B GUANAJBO C C GARITA C GLADSTONE B GCMEN B GUANAJBO C C GRACEPONT B GUANAJBO C C GARITA C GLADSTONE B GRACEY D GUCKEEN C HANTOU B GARRONE B GLEN B GRACEY D GUCKEEN C HANTOU B GARRONE B GLEN B GRACEY D GUCKEEN C HANTOU B GARRONE B GLEN B GRACEY C C GRADSTON C C GRADSTON B GUELPH B HANTZ D GARRONE B GLEN B GRACEY C C GRADSTON B GUELPH B HANTZ D GARRONE B GLEN B GRACEY C C GRADSTON B GUELPH B HANTZ D GARRONE B GLEN B GRACEY C C HAPOCO B GARRON B GLENDON C C GRADSTON B GUELPH B HANTZ D GARRONE B GLENDON C C GRADSTON B GUELPH B HANTZ D GARRON B GLENDON C C GRADSTON B GUELPH B HANTZ D HARBOURTON B GARRON B GLENDON C C GRADSTON C C GRADSTON C C GRADSTON C C GRADSTON C C		A	GILISPIE		GCRHAM	В	GRUTEN	A		С
GANNETT D GILLS C GCRMAN B GROVER B HANALEI C GANSNER D GILHGRE D GCRLS A GKCVETLN B HANALEI C GANSNER D GILHGRE D GCRLS A GKCVETLN B HANAMAULU A GAPO D GILPIN C GDRZELL B GRUBBS D HANCEVILLE B GAPATER B GILRCY C GOSEEN B GRULLA D HAND B GARALEI C C GARALEI C GARALEI C C HANDGRD B GARBER B GILSON B CCSPUTT C GRUNCY C HANEY B GARBUTT B GINAT D GCTHAM A CRUVER C HANGARD C GARCENO C GINGER C GCTHAMD D GRYGLA C HANGARD C GARCENO C GINGER C GCTHAMD D GRYGLA C HANGER B GARDINER A GINST C GGTHAM A GRUVER C HANGARD C GARDINER A GINST C GGTHAM A GRUVER C HANGER B GARDINER A GINST C GGTHAM A GRUVER C HANGER B GARDINER A GINST C GGTHAM A GRUVER C HANGER B GARDINER A GINST C GGTHAMD D GAYGLA C HANGER B GARDINER A GINST C GGTHAM A GRUVER C GUADALUPE B HANIPOE B GARDINER A GINST C GGTHAM C GUADALUPE B HANIPOE B GARDINER A GINST C GGTHAM C GUADALUPE B HANIPOE B GARDINER A GINST C GGTHAM C GUADALUPE B HANIPOE B GARDINER A GLOCK C GARDINE C GUADALUPE B GHANNA E GARDONE A GLOCK C GARDONE B GUANAJIBO C HANNA E GAREY C GLOCK C GLADSTONE B GCWEN B GUANAJIBO C HANNA E GARTILA C GLADBIN A GRABE B GUAYABO B HANS C C GARITA C GLADBIN A GRABE B GUAYABO B HANS C C GARLET A GLASGOM C GRABEE B GUAYABO B HANS C C GARLET A GLASGOM C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGOM C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGOM C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGOM C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGOM C GRACEVILLE B GUBEN B HANSON A GARLET C GLABAN B GRALEY D GUENCC C HAPPEY C GARLET B GLENDIVE B GRANDH D GUENCC C HAPPEY C GARLETON B GLENDUR D GARRET D GLENDUR D GARRETON B GLENDUR D GARRETON B GUENCC C HAPPEY C GARANTH B GUEST D HARBGRD B GARRETON B GLENDUR D GARRETSON B GLENDUR D GARRETON B GUENDUR C GUNBARHEL A HARCING D										
GAPO D GILMORE D GCRLS A GKCVETCN B HANAMAULU A GAPO D GILPIN C GDRZELL B GRUBBS D HANCEVILLE B GAPO D GILPIN C GOSTEN B GRUBBS D HANCEVILLE B GAPAYER B GILRCY C GOSTEN B GRUBBS D HANCEVILLE B GARBER B GILSON B ECSHUTE D GRUMMIT C HANDFGRD B GARBER B GILT EDGE C GCSPCRT C GRUNCY C HANCY B GARBER B GILT EDGE C GCSPCRT C GRUNCY C HANCY B GARBUTT B GINAT D GCTHAM A CRUVER C HANGARAD C GARCENO C GINGER C GCTHAMD D GRYGLA C HANGARD C GARCENO C GINGER C GCTHAMD D GRYGLA C HANGARD C GARCENO C GINGER C GCTHAMD D GRYGLA C HANGER B GARDINER A GINI B GOTTHIC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUPE B HANIPOE B GAMONERS FORK B GIN D A GCULDING D GUALALA D HANKS C GAMONERS FORK B GIND A GCULDING D GUALALA D HANKS B GANDREVILLE D GIVEN C GCVAN C GUAMANI B HANLY A GARCONE A GLADEN A GOVE B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCMER B GUANABO D HANNE C GARRITA C GLADHIN A GRABE B GUANABO D HANNE C GARRITA C GLADHIN A GRABE B GUANABO D HANSE C GARLITA C GLADHIN A GRABE B GUANABO D HANSE C GARLITA C GLADHIN A GRABE B GUANABO D HANSEL C GARLITA C GLADHIN B GRACY D GUCKEEN C HANNON A GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GRACEMONT B GUANABO D HANSEL C GARMUN C GLEASON C GRAAPHAM D GUENCC C HAP B GARNOR B GLENDALE B GRANM B GUENCE C HAPPOOD B GARNOR B GLENDALE B GRAAM D GUENCC C HAPPOOD B GARNOR B GLENDALE B GRAAM B GUERRERC C HANTHO B GARNOR D GARRATSON B GLENDALE B GRANDE C C GUARASEY C HAPPOOD B GARRATSON B GLENDALE B GRANDE COULER B HARCO B GARRATSON B GLENDALE B GRANDE C D GULKE B HARCO B GARRATSON B GLENDALE B GRANDE C GUMBORT C HARDESTY B GARNOR C GUMBORT C C GUM										
GAPPMAYER B GILRCY C GOSFEN B CRULLA B GARBA B GILSON B CCSHUTE D GRUMMIT C HANDGRD B GARBER R GILT EDGE C GCSPCRT C GRUNCY C HANEY B GARBUTT B GARDUTH B GARDUTH C HANGAARD C GARCENO C GINGER C GCTHAMM A CRUVER C HANGAARD C HANGER B GARDUNA GARDUNA B GINI B GOTHIC C GUADALUPE B HANIPOE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUPE B HANIPOE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUP B HANKS C GAMONERS FURK B GIND A GCULDING D GUALALA D HANKS B GARDNERVILLE D GIVEN C CCVAN C GUAMANI B HANLY A GARDONE GAREONE A GLADCEN A GOVE B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCWEN B GUANAJIBO C HANNA B GAREY C GLADMIN A GRABE B GUANAJBO D HANOVER C GARTIFLD C GLADMIN A GRABE B GUAYABO B HANS C GARTITA C GLAMIS C GRABLE B GUAYABO B HANS C GARLAND B GLANN B CC GRACEMONT B GUAYABO D HANSEL C GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGON C GRACEVILLE B GUBEN B HANSON A GARLET B GLEND B GARMM B GUENCC C HAPPODD B GARNER D GLENBROOK D GLENBROOK D GLENBROOK D GLENBROOK D GLENBROOK D GLENBROOK D GARMM B GUERRERC C HAPPODD B HARBOURTON B GARRETSON B GLENDALE B GRANDY B GUERRERC C HARDESTY B HARCO B GARNETT B GLENDALE B GRANDY B GUERRERC C HARDESTY B HARCO B GARNET B GLENDALE B GRANDY B GUERRERC C HARDESTY B HARCO B GARNER C GUNBARREL A HARCING D CHARDESTY B HARCO B GARNER C GUNBARREL A HARCING D CHARCENO D CHARCENO C GURBARREL A HARCING D CHARCENO D CHARCENO C GURBARREL A HARCING D C										
GARA B GILSON B CCSHUTE D GRUMHIT C HANDFGRD B GARBER R GILT EDGE C GCSPCRT C GRUNCY C HANEY B GARBUTT B GINAT D GCTHAM A CRUVER C HANGAARD C GARCENO C GINGER C GCTHARD D GRYGLA C HANGARD C GARDENA B GINI B GOTHIC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUPE B HANIPOE B GARDINER B GIND A GCCLDING D GUALALA D HANKINS C GAMDNERYVILLE D GIVEN C C GCVAN C GUAMANI B HANLY A GARDONE A GLADEON A GOVE B GUANAJIBO C HANNA B GARPONE A GLADEON A GOVE B GUANAJIBO C HANNA B GARPET D C GLADEIUN B GCWEN B GUANAJIBO C HANNA B GARPET D C GLADEIUN A GRABE B GUAYABO B HANS C GARITA C GLADEIUN A GRABE B GUAYABO B HANS C GARITA C GLADEIUN B GCWEN B GUAYABO B HANS C GARITA C GLADEIUN B GCWEN B GUAYABO B HANS C GARLAND B GLANN B/C GRACEMONT B GUAYAMA D HANSEL C GARLAND B GLANN B/C GRACEMONT B GUAYAMA D HANSEL C GARLAND B GLANN B/C GRACEMONT B GUAYAMA D HANSEL C GARLAND B GLANN B/C GRACEMONT B GUAYAMA D HANSEL C GARLAND C GLEAN B GRACY D GUCKEEN C HANTHO B GARLET A GLASGOW C GRACEMONT B GUAYAMA D HANSEL C GARLAND C GLEAN B GRACY D GUCKEEN C HANTHO B GARNON C GARLET B GUAYAMA D HANSEL C GARNOR C GEARNON C GRACEMONT B GUENCC C HAPO B GARNOR D GARMON D GARRAND B GRACY D GUCKEEN C HANTHO B GARNOR D GARNOR D GARMON B GRACY D GUCKEEN C HANTHO B GARNOR D GARNOR D GARMON B GUENCC C HAPOOD B GARNOR D GARMON B GUENCC C HAPOOD B GARNOR D GARMON B GUENCC C HAPOOD B GARRAND B GLENDALE B GRANDE RONDE D GULER B HARCO B GARRETSON B GLENDALE B GRANDE RONDE D GULER B HARCO B GARRETSON B GLENDALE B GRANDE RONDE D GULER B HARCO B GARRETSON B GLENDALE B GRANDE RONDE C GUNBOOT C HARCEMAN B GARNOR C GARNOR C GARNOR C GARNOR C C GRANDE C C GUNBOOT C C HAPOESTY B GARNOR C GARNOR C C GUARDAREL A HARCON C C GARNOR C C GUARDAREL A HARCON C C GARNOR C C GARNOR C C GUARDAREL A HARCON C C GUARDAREL A HARCON C C GARNOR C C GUARDAREL A HARCON C C GARNOR C C GUARDAREL										
GARBUTT B GINAT D GCTHAM A CRUVER C HANGAARD C GARCEND C GINGER C GCTHARD D GRYGLA C HANGER B GARDENA B GINI B GOTHIC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUADALUPE A HANKINS C GARONERS FORK B GIND A GCLUDING D GUALALA D HANKS B GARDINER C GUADALUPE D GIVEN C CCVAN C GUAMANI B HANLY A GARDONE A GLADCEN A GOVE B GUANAJIBO C HANNA B GARDONE A GLADCEN A GOVE B GUANAJIBO C HANNA B GARDONE A GLADCEN B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCMEN B GUANICA D HANVER C GARFIFLD C GLADHIN A GRABE B GUANABO B HANS C GARITA C GLAMIS C GRABLE B GUAYABO B HANS C GARLITA C GLAMIS C GRABLE B GUAYABO B HANS C GARLITA C GLAMIS C GRABLE B GUAYABO B HANS C GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLEASGON C GRABLE B GUAYABO B HANSON A GARLET B GLEND B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUEPPH B HANTZ D GARNORE B GLEND B GRACY D GUCKEEN C HANTHO B GARNOR D GARNOR D GARMON D GARRET D GLEASON C GRAPTGN B GUEPPH B HANTZ D GARNOR D GARNOR D GARMM B GUERRER C C HAPPGOOD B GARRER D GLENDRUC C C HAPPGOOD B GARRER D GLENDRUC C GRAMM B GUERRER C C HAPREY C GARNOR D GARMM B GUERRER C C HAPREY C GARNOR D GARNOR D GARMOR B GUERRER C C HAPREY C GARRET B GLENDALE B GRANDE ROND B GULKANA H HARCOMB B GARRET B GLENDALE B GRANDE ROND C GURBORT C HARCOMB B GARRET B GLENDALE B GRANDE ROND C GURBORT C C HARCOMB B GARNOR D GARNOR C C GRANDER CODE C GARNOR D GARNOR C C GRANDE CODE C GARNOR D GULKANA H HARCOMB B GARNOR D GARNOR C C GRANDE CODE C GARNOR C C GURBORT C C HARCOMB B GARNOR D GARNOR C C GRANDE C C GURBORT										
GARCENO C GINGER C GCTHARD D GRYGLA C HANGER B GARDENA B GINI B GOTHIC C GUADALUPE B HANIPOE B GARDINA B GINI B GOTHIC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUADE A HANKINS C GARDINER FORK B GIND A GCULDING D GUALALA D HANKS B GARDINER FORK B GIND A GCULDING D GUALALA D HANKS B GARDINER VILLE D GIVEN C CCVAN C GUAMANI B HANLY A GARDONE A GLADEN A GOVE B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCWEN B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCWEN B GUANABOU B HANS C GARITA C GLADWIN A GRAPE B GUAYABO B HANS C GARITA C GLADWIN A GRAPE B GUAYABO B HANS C GARITA C GLADWIN B GLANN B C GARCEPONT B GUAYABO D HANSEL C GARLET A GLASGOW C GRACEPONT B GUAYABO D HANSEL C GARLET A GLASGOW C GRACEPONT B GUAYABO B HANSON A GARLET A GLASGOW C GRACEPONT B GUENCE C HANTHO B GARMON C GLEAN B GRACY D GUCKEEN C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON C GLEASON C GRACEPONT B GUENCC C HANTHO B GARMON B GLENDALE B GRANDH D GUENCC C HAPPOODD B GARMON B GLENDALE B GRANDH D GUENCC C HAPPOODD B GARMON B GLENDALE B GRANDH B GUEST D HARBOUNTON B GARRETSON B GLENDALE B GRANDH A GARBOUNTON B GLENDALE B GRANDH A GARBOUNTON B GLENDALE B GRANDH C C GUBBOTT C HARBOUNTON B GARRETSON B GLENDALE B GRANDH C C GUBBOTT C HARBOUNTON B GARRETSON B GLENDALE B GRANDE CONDE										
GARDINER A GINSER C GGTHC C GUADALUPE B HANIPOE B GARDINER A GINSER C GGTHC C GUAJE A HANKINS C GARDINER B GIND A GCULDING D GUALALA D HANKS B GARDNERVILLE D GIVEN C CCVAN C GUAMANI B HANLY A GARDNERVILLE D GALDCEN A GOVE B GUANAJIBO C HANNA B GAREY C GLADKIN B GCEEN B GUANAJIBO C HANNA B GAREY C GLADKIN B GCEEN B GUANAJIBO C HANNA B GAREY C GLADKIN A GRABE B GUAYABO B HANS C C GARTIFLD C GLADKIN A GRABE B GUAYABO B HANS C C GARTIFLD C GLADKIN B GUAYABO B HANS C C GARLAND B GLANN B/C GRACEMONT B GUAYABO D HANSEL C GARLAND B GLANN B/C GRACEMONT B GUAYABO D HANSEL C GARLET A GLASGOW C GRACEVILLE B GUBEN B HANSON A GARLEGK C GLEASON C GRACEVILLE B GUBEN B HANSON A GARLEGK C GLEASON C GRAFTGN B GUELPH B HANTO B GARNUN C GLEASON C CRAFTGN B GUELPH B HANTO B GARNURE B GLEN B GRACY D GUENCC C HANTHO B GARNURE B GLEN B GRAHAM D GUENCC C HAPGOOD B GARNER D GLENBERG B GRAIL C GUENNSY C HAPGOOD B GARRAND B GLENBERG C GRANATH B GUEST D HARBGRD B GARRAND B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY A/D GUIN A HARBGRD B GARRETT B GLENDALE B GRANBY C GUINBARREL A HARCING D		_		_	001111111		CHOTEN	-		-
GARDERS FORK B GIAD A GCULDING D GUALALA D HANKS B GARDERVILLE D GIVEN C CCVAN C GUAMANI B HANLY A GARDONE A GLADEN A GOVE B GUANAJIBO C HANNA B GAREY C GLADSTONE B GCWEN B GUANAJIBO C HANNA B GAREY C GLADWIN A GRAPE B GUAYABO B HANS C GARITA C GLADWIN A GRAPE B GUAYABO B HANS C GARITA C GLADWIN B GLANN B/C GRACEMONT B GUAYABO D HANSEL C GARLET A GLASGOW C GRACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GRACEVILLE B GUBEN B HANSON A GARLEGK C GLEAN B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUEPH B HANTZ D GARMORE B GLEN B GRAPAM D GUENCC C HAP B GARMORE B GLEN B GRAHAM D GUENCC C HAP B GARMORE B GLEN B GRAHAM D GUENCC C HAP B GARMOR D GARMOR D GARMOR B GRAPM B GUERRER C C HAPROOD B GARRAD D GLENGER C C HAPROOD B GARRAD B GLENDALE B GRANATH B GUEST D HARBORD B GARRAD B GLENDALE B GRANDY A/D GUIN A HARBOUNTON B GARRETT B GLENDALE B GRANDE C GUMBARREL A HARCO B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCO B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCO B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCO B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C C GUMBARREL A HARCON B GARRISON B GLENDALE B GRANDE C C GUMBARREL A HARCON B GARRISON B GL	GARJENA	В	GINI	В	GCTHIC	c	GUADALUPE	В	HANIPOE	В
GARDORE VILLE D GIVEN C CCVAN C GUAMANI B HANLY A GARDORE A GLADCEN A GOVE B GUANAJBO C HANNA B GAREY C GLADSTONE B GCVER B GUANALBO C HANNA B GAREY C GLADSTONE B GCVER B GUANALBO C HANNOVER C GARITA C GLADSTONE B GCVER B GUANABO B HANS C GARITA C GLAMIS C GRABLE B GUAYABO B HANS C GARITA C GLAMIS C GRABLE B GUAYABO D HANSEL C GARLET A GLASGOW C GARCEMONT B GUAYAMA D HANSKA C GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET C GLEAN B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUELPH B HANTZ D GARMORE B GLEN B GRACY D GUENCC C HAP B GARNER D GLENBROK D GRAMM D GUENCC C HAP B GARMORE B GLEN B GRALL C GUENSEY C HAPGOOD B GARGO D GLENBROK D GRAMM B GUERRER C C HAPNEY C GARRAD B GLENDALE B GRANDH B GUEST D HARBORD B GARRAD B GLENDALE B GRANDH B GUEST D HARBORD B GARRETSON B GLENDALE B GRANDFIELD B GULKANA H HARCOM B GARRETT B GLENDALE B GRANDFIELD B GUKANA H HARCOM B GARRISON B GLENDALE B GRANDFIELD B GUKANA H HARCOM B GARRISON B GLENDALE B GRANDFIELD B GUKANA H HARCOM B GARRISON B GLENDALE B GRANDFIELD B GUKANA H HARCOM B GARRISON B GLENDALE B GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE B GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE C GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE B CRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE C GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE C GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE C GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDALE C GRANDFIELD B GUKANA H HARCEMAN B GARRISON B GLENDAR C GRANDFIELD B GUKANA H HARCEMAN B GARRISON C GRANDFIELD C GUMBOOT C HARDESTY B GARRISON B GLENDAR C GRANDFIELD A HARCING D										
GAREY C C GLADSTONE B GCWEN B GUANAJIBO C HANNA B GAREY C C GLADSTONE B GCWEN B GUANAJIBO C HANNOER C C GARFIELD C GLADWIN A GRABE B GUAYABO B HANS C GARFIELD C GLADWIN A GRABE B GUAYABOTA O HANSEL C C GABLEA C C GABLEA C C GRABLE C C GABLEA C C GUABLEA C C GABLEA C C GUABLEA C C GABLEA C C GABLEA C C GABLEA C C GABLEA C C GUABLEA C C GUABLEA C C GUABLEA C C GABLEA C C GABLEA C C GUABLEA C C GABLEA C C GUABLEA C C GUAB										
GARFIELD C GLADHIN A GRABE B GUAYABO B HANS C GARITA C GLADHIN A GRABE B GUAYABO B HANS C GARAITA C GLADHIN B GLANN B/C GRACEMONT B GUAYABO D HANSEL C GARLET A GLANN B/C GRACEMONT B GUAYAMA D HANSKA C GARLET A GLASGOW C GPACEVILLE B GUBEN B HANSON A GARLECK C GLEAN B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUELPH B HANTZ D GARMORE B GLEN B GRACH D GUENCC C HAP B GARNER D GLENBROOK D GRAPM D GUENCC C HAP B GARNER D GLENBROOK D GRAPM B GUERRERC C HAPROUD B GARR D GLENBROOK D GRAPM B GUERRERC C HAPREY C GARRAD B GLENDALE B GRANATH B GUEST D HARBORD B GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDALE B GRANDE RCNDE C GUMBOOT C HARCEMAN B GARRISON B GLENDALE B GRANDE RCNDE C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C GRANCIEW C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C GUMBOOT C C HARCEMAN B GARRISON B GLENDAR C C GUMBOOT C C	GARDONE		GLADCEN	A		В	GUANAJIBO	С		e
GARITA C GLAMIS C GRABBE B GUAYABUTA O HANSEL C GARLAND B GLANN B/C GRACEMONT B GUAYAMA D HANSON A GARLET A CLASGOW C GPACEVILLE B GUBEN B HANSON A GARLET A CLASGOW C GPACEVILLE B GUBEN B HANSON A GARLEGK C GLEAN B GRACY D GUEKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUELPH B HANTZ D GARMORE B GLEN B GRAHAM D GUENCC C HAP B HANTZ D GARMORE D GLENBERG B GRAIL C GUENSEY C HAPGOOD B GARRER D GLENBERG B GRAIL C GUENSEY C HAPROOD B GARRAND B GLENBERG C C HAPROOD B GARRAND B GLENDALE B GRANATH B GUEST D HARBOURTON B GARRAND B GLENDALE B GRANDY A/D GUIN A HARBOURTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B CRANDFIELD B GULKANA H HARCOMA B GARRISON B GLENDALE B GRANDE C GUMBOOT C HARCOMB D GARRISON B GLENDALE B GRANDE COULER B HARCO B GARRISON B GLENDALE B GRANDE C GUMBOOT C HARCOMB D GARRISON B GLENDALE B GRANDE C GUMBOOT C HARCOMB D				_		_		-		
GARLET A GLASGOW C GPACEVILLE B GÜBEN B HANSON A GARLECK C GLEAN B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUELPH B HANTZ D GARMORE B GLEN B GRAHAM D GUENCC C HAP B GARNER D GLENBERG B GRAIL C GUENSEY C HAPGOOD B GARNER D GLENBROOK D GRAMM B GUERRERC C HAPNEY C GARN D GLENCOE C GRANATH B GUEST D HARBORD B GARRETSON B GLENDALE B GRANDY A/D GUIN A HARBOURTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B CRANDFIELD B GUKANA B HARCOMB GARRETSON B GLENDALE B GRANDE COMBONIA B GARNETSON B GLENDALE B GRANDE COMBONIA B GARNESTON B GLENDALE B GRANDE COMBONIA B HARCOMB B GARNESTON B GLENDALE B GRANDE COMBONIA B HARCOMB B GARNESTON B GLENDALE B GRANDE COMBONIA B HARCOMB B GARNESTON B GLENDARA C GRANDESTOW B GARRETT B GLENDORA C GRANDESTOW B GARRETT B GLENDORA C GRANDESTOW B GARRET C GUNBOOT C HARDESTY B GARNEN C GUNBOOT C HARCOMB D										
GARLOCK C GLEAN B GRACY D GUCKEEN C HANTHO B GARMUN C GLEASON C GRAFTGN B GUELPH B HANTZ D GARMUNE B GLEN B GRAHAM D GUENCC C HAP B GRANER D GLENBERG B GRAIL C GUENSEY C HAPGOOD B GARGO D GLENBERG B GRAIL C GUENSEY C HAPGOOD B GARGO D GLENBERG C GARAM B GUERRERC C HAPROY C GARAM B GUERRERC C HAPROY C GARAM B GUERRERC C HAPROY B GARRARD B GLENDALE H GRANBY A/D GUIN A HARBORD B GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B GRANDERCHD B GULKANA H HARCEMAN B GARRISON B GLENDALE B GRANDERCHD C GUURBCOT C HARDESTY B GARNIN C GLENDIVE B GRANDERCHD C GUURBCOT C HARDESTY B GARNIN C GLENDIVE B GRANDERCH C GUMBCOT C HARDESTY B GARNIN C GLENDIVE B GRANDERCH C GUMBCOT C HARCEMAN B GARNIN C GLENDIVE B GRANDERCH C GUMBCOT C HARCEMAN B GARNIN C GLENDIC B GRANDER C GUMBCOT C HARCEMAN B GARNIN C GLENDIC B GRANDER C GUMBCOT C HARCING D										
GARMUN C GLEASON C CRAFTGN B GÜELPH B HANTZ D GARMORE B GLEN B GRAHAM D GUENCC C HAP B GARNER D GLENBERG B GRAIL C GUERNSEY C HAPGOOD B GARG D GLENBROOK D GRAMM B GUERRERC C HAPREY C GARK D GLENCOE C GRANATH B GUEST D HARBGRD B GARRARD B GLENDALE H GRANBY A/D GUIN A HARBOURTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE E CRANDFIELD B GULKANA H HARCEMAN B GARRISTN B GLENDORA C GRANCVIEW C GUMBGOT C HAPRESTY B GARKIN C GLENGLO B GRANER C GUMBGOT C HARCESTY B										
GARNER D GLENBERG B GRAIL C GUERNSEY C HAPGOOD B GARG D GLENBROOK D GRAMM B GUERRERC C HAPNEY C GARR D GLENCOE C GRANATH B GUEST D HARBORD B GARRARD B GLENDALE B GRANBY A/D GUIN A HARBOURTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE C CRANDFIELD B GULKANA B HARCEMAN B GARRISON B GLENDORA C GRANCYIEW C GUMBOOT C HARDESTY B GARWIN C GLENELG B GRANER C GUNBOOT C HARDESTY B	GARHUN	C						В	HANTZ	Ð
GARG D GLENDROOK D GRAMM B GÜERRERC C HAPNEY C GARK D GLENCOE C GRANATH B GUEST D HARBORD B GARRARD B GLENDALE H GRANBY A/D GUIN A HARBOURTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE E CRANDFIELD B GULKANA H HARCEMAN B GARRISTN B GLENDORA C GRANCVIEW C GUMBCOT C HARDESTY B GARWIN C GLENDEG B GRANER C GUNBARREL A HARCING D										
GARRAD B GLENCOE C GRANATH B GÜEST D HARBORD B GARRARD B GLENDALE B GRANBY A/D GUIN A HARBORTON GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B CRANDFIELD B GULKANA B HARCOMB B GARRISON B GLENDORA C GRANCVIEW C GUMBOOT C HARDESTY B GARNIN C GLENELG B GRANER C GUMBOOT A HARCING D										
GARRETSON B GLENDALE B GRANDE RCNDE D GULER B HARCO B GARRETT B GLENDIVE B CRANDFIELD B GULKANA H HARCEMAN B GARRISON B GLENDORA C GRANCVIEW C GUMBCOT C HARDESTY B GARWIN C GLENELG B GRANER C GUNBARREL A HARGING D	GARK	D	GLENCOE	C	GRANATH	В	GUE ST	Ð	HARBORD	
GARRETT B GLENDIVE & CRANDFIELD B GULKANA H HARCEMAN B GARRISON B GLENOGRA C GRANCVIEW C GUMBOOT C HARDESTY B GARWIN C GLENELG B GRANER C GUNBARREL A HARGING D										
GARMISON B GLENOGRA C GRANCVIEW C GUMBOOT C HARDESTY B GARWIN C GLENELG B GRANER C GUMBARREL A HARGING D										
			GLENOORA	C	GRANCVIEW	c	GUMBCOT		HARDESTY	
	GAKWIN			-						

NOTES A BLANK HYDPOLOGIC SOIL GROUP IMPLICATES THE SOIL GROUP HAS NOT REEN DETERMINED TWO SOIL GROUPS SUCH AS B/C INDICATES THE DRAIMED/UNDPAIMED SITUATION

						HOMENCEONE			
HARDSCRABBLE	В	HERER	В	HILCRETH	D	HONEYGROVE	C	HUMBARGER	В
HARDY	D	HEBERT	C	HILEA	D	HONEYVILLE	C	HUMBIRD	Ç
HARGRE AVE	R C	HEBGEN HERO	A D	HILES HILGER	В В	HUNCKAA	B	HUMBOLD1 HUMDUN	C
HARKERS			C	HILGRAVE	В	HONCLUA	В	HUME	B C
HARKEY	В	HEBRON				HONCHANU	8		
HAPLAN	В	HECHT	B C	HILLEMANN HILLET	C D	HONCUL TUL I	Ď	HUMESTON HUMPENGTON	C C
HARLEM	c c	HECK I HECL A	В	HILLFIELD	В	HUNUAULU	Ā	HUMPHREYS	В
HARLESTON HARLINGEN	D	HECTOR	D	PILLGATE	Č	HCOD	В	HUMPTUL1PS	В
HARMEHL	č	HEDDEN	č	HILLIARD	В	HDODLE	В	HUNSAKER	В
HARMUNY	č	HEDR ICK	В	HILLON	В	HCCDSPCRT	В	HUNTERS	В
HARNEY	Č	HEDVILLE	Ď	HILLSBCRO	В	HOGDVIEW	В	HUNTING	č
HARPETH	В	HEGNE	D	HILLSCALE	В	HODKTON	č	HUNTINGTON	В
HARPS	B	HEIDEN	D	HILPAR	C/D	HOOLEHUA	В	HUNTSVILLE	В
HARPSTER	č	HEIDTMAN	č	HILC	A	HOCPAL	Č	HUPP	В
HARPT	В	HEIL	D	HILT	В	HCCPER	Ď	HURLEY	Ď
HARQUA	В	HEIMDAL	В	HILTON	В	HCOPESTON	В	HURCN	č
AUCRAH	В	HEISETON	В	HINCKLEY	A	HCC 2 I C	A	HURST	Ď
HARRIET	D	HEISLER	В	HINDES	č	HECT	D	HURWAL	e
HARR I MAN	В	HEIST	8	HINESBURG	č	HOUTEN	D	HUSE	č
HARRIS	D	HEITT	Č	HINKLE	Ď	HCDVER	В	HUSSA	8/0
HARRISBURG	۵	HEITZ	D	HINMAN	č	HDPETCN	c	HUSSMAN	D
HARRISON	č	HEIZER	D	HENSDALE	•	HCPEWELL	-	HUTCHENSON	č
HARRISVILLE	č	HELOT	č	HENTZE	D	FORGCCD	С	HUTSCN	8
HARSTENE	В	HELEMANO	č	HISLE	Ď	HOPKINS	В	HUXLEY	D
HART	D	HELENA	č	HITT	В	HOPLEY	8	HYAM	D
HART CAMP	č	HELMEK	č	HI VISTA	č	HCPPER	В	HYA1	Ā
HARTFORD	Ä	HELVETIA	Č	HEWASSEE	В	HOQUIAM	В	HYATTVILLE	В
HARTIG	В	HELY	В	HEWCOD	A	HORAT10	D	HYDABURG	D
HARTL AND	В	HEMBRE	В	HIXTON	B	HCRD	В	HYDE	Ď
HARTLETON	В	HEMMI	c	HCBACKER	В	HCREB	В	HYDRO	Č
HARTLINE	В	HEMPFIELD		HCBAR	č	HCRNELL	D	HYMAS	Ď
HAPTSBURG	В	HEMPSTEAD	С	HC982	В	HORNING	A	HYRUM	8
HARTSELLS	В	HENCRATT	В	HCBSCN	Č	FORM I TOS	D	HYSHAM	Č
HARTSHERN	В	HENDERSON	В	PCCHHE I M	В	HCRRCCKS	В		
HARVARD	В	HENDRICKS	В	HOCKING	В	HORSESHDE	В	IAO	С
HARVEL	В	HENEFER	c	HCCKINSON	č	HORTON	В	IBERIA	Č
HARVEY	č	PENKIN	В	HCCKLEY	č	FCRTCHVILLE	В	ICENE	č
HASKILL	Ā	HENLEY	Č	HCCCE	В	HOSKIN	č	104	В
HASKINS	C	HENL I NE	č	FUCGINS	č	HOSLEY	Ū	IDABEL	В
HASSELL	D	HENNEKE	c	HCCGSCN	Č	HCSMER	c	IDANA	Č
HASTENGS	В	HENNEPIN	В	HCEBE	В	HOTAW	č	IDECN	Ď
HAT	В	HENNINGSEN	č	HCELZLE	č	HCT LAKE	č	10MCN	В
HATBORC	D	HENRY	Ď	HCFFMAN	č	HCUDEK	В	IGNAC ID	В
HATCH	Ċ	HENSEL	В	HCFFFANVILLE	č	HOUGHTON	A/D	IGC	D
HATCHERY	C	HENSHAW	Ċ	HCGANSBURG	В	HOUK	C	1 GUAL DAD	D
HATFIELD	Č	HENSLEY	D	HCCELAND	В	HCULKA	Ü	IHLEN	D
HATHAWAY	В	HEPLER	D	HCGG	Ď	HOULTON	C/D	LJAP	Č
HATTIE	c	HERBERT	В	FOGRIS	В	HCUNDBY	D	ILDEFCHSD	8
HATTON	Č	HEKEFORD	В	HCH	В	FCURGL ASS	В	ILKA	В
HAUBSTADT	C	HERKIMER	8	HOHPARN	С	HCUSATONIC	D	ILLIDN	8/0
HAVANA	В	HEFLONG	D	HCKC	č	HOUSE MOUNTAIN	Ď	EMA	В
HAVEN	В	FERMISTON	В	HELBROCK	8	FCUSEVILLE	č	IMBLER	8
HAVERLY	В	HERMON	A	HOLCOMB	D	HCUSTCA	D	IMLAY	Ċ
HAVERSON	В	HERNDON	В	HCLDAWAY	D	HOUSTON BLACK	C	IMMCKALEE	8/0
HAVILLAH	в	HERD	В	FCLDEN	A	HDVDE	A/C	IMPERIAL	C
HAVINGDON	С	HEPRERA	Α	HELCERNESS	С	PUVEN	D	INAVALE	A
HAVRC	9	HERRICK	C	HOLEREGE	В	HOVEKWEEP	C	[ND[AHOMA	D
HAVRELON	В	HEPRON	В	FELLAND	В	HOVERT	D	INDIAN	
HAW	В	HERSH	A	HELLINGER	В	HUVEY	č	INDIAN CREEK	D
HAWES	A	HERSHAL	8/0	FCLLIS	C/D	HCWARD	В	INDIANC	С
HAWI	в	HESCH	В	HCLL1STER	D	HCWELL	C	INDIANCLA	Δ
HAWKEYE	A	HESPER	С	HELLEMAN	С	HGW LAND	C	INDIO	В
HAWKSELL	A	PESPERIA	В	HCLLCWAY	Α	HCYC	В	INGA	В
HAWK SPRENGS	9	HESPERUS	В	HCLLY	D	HCYLETON	С	INGALLS	Θ
HAXTUN	Α	HE S S E	C	HELLY SPRINGS	D	ECYPUS	A	INGARD	В
HAYBOURNE	В	HESSEL	C	HCLLYWCCC	D	HCYTVILLE	D	INGENIO	C
HAYBRO	c	HESSELBERG	C	HCLMDEL	С	HUBBARD	Α	INGRAM	D
HAYDEN	В	HESSELTINE	В	FCLPES	В	HUBER	D	INKLER	В
HAYESTON	В	HESSON	C	FCLCPUA .	В	FUBERT	В	INKS	D
HAYESVILLE	В	HETTINGER	D	HCLCPAW	B/D	HUBL ER SBURG	С	INMAN	C
HAYFIELD	P	HEXT	В	HCLRDYD	В	FUCKLEBERRY	C	INFC	Δ
HAYFORD	C	HEZEL	В	HCLSINE	В	HUDSON	С	INSKIP	C
CNOMYAH	В	HIALEAH	D	HCLST	В	HUECG	C	INVERNESS	D
HAYNESS	U	HIAWATHA	Α	HELSTER	В	HUEL	Α	INWCDD	C
HAYNIE	8	HIBBARD	C	HCLT	8	HUENEME	B/C	10	В
HAYPALSS	Δ	HIPBING	C	HCLTLE	В	FUCKFUERO	D	IOLA	A
HAYSPUR	8/0	HICKCRY	C	HULTVILLE	С	HUEY	D	IDLEAU	C
HAYTER	A	HICKS	8	HCLYCKE	C/D	FUFFINE	A	IONA	В
HAYTI	D	HIDALGO	В	HOMA	C	HUGG I N S	C	IONIA	В
COOMAN	В	HIDEAWAY	D	HOME CAMB	C	HUGHES	C	LOSCC	В
HAZEL	c	HIDEWOOD	C	HCMELAKE	В	FUGHESVILLE	В	IPAVA	В
HAZELAIR	D	HIGHAMS	D	HCMER	C	PUGC	В	IRA	C
HAZEV	В	HIGHFIELD	В	HCMESTAKE	D	HUICHICA	C	IREDELL	D
HAZLEHURST	C	HIGH GAP	C	HCMESTEAC	В	HUIKAU	Α	1RETEBA	Ç
HAZLETON	В	HIGHL AND	В	HCHAUNAU	C	HULETT	В	1RIM	C
HEADLEY	В	HIGHMORE	ь	HENCUT	В	HUL L S	C	IRCCK	٤
HEADQUARTERS	В	HIGH PARK	8	HONCALE	D	HULLT	В	IRCA BLDSSOM	D
HEAKE	D	HIHIMANU	A	HCNDC	C	HULUA	D	IRCH MOUNTAIN	D
HEATH	C	HIIBNCR	C	HCNOCHO	В	HUM	В	IRDA RIVER	6
HEATLY	A	HIKO PEAK	ď	PCNECYE	В	HUMACAO	Ð	IRDATCH	C
HEBBRONVILLE	3	HIKC SPRINGS	C	FOREY	D	HUMATAS	С	IRVINGTON	C
	HOTES	A PLANK HYOD	212010	SOLI COOUR LURIS					

HINTES A BLANK HYDROLOGIC SOIL CPOUP INDICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS BYC PROTECTES THE DOALMED/UNIDALMED SITUATION

IRWIN	0	JONUS	В	KARLG	D	KERMIT	Α	KITSAP	С
ISAAC	С	JCPL IN	в	KARLUK	С	KERR	В	KITTANNING	
ISAAUUAH	B/C	JOPPA	в	KARNAK	D	KERRICK	8	KITTITAS	8
ISABELL	C	JCRDAN	0	KARNES	В	KERRTOWN		KITTREDGE	C
ISAN	υ	JCRNAOO	6	KARRO	8	KERSHAW	A	KITTSON	С
I SANTI I SHAM	D	JORY JOSE	ç	KARS KARTA	Č	KERSICK KERSTON	D A/D	KIUP KIVA	8 8
ISHI PISHI	C	JOSE PHINE	C B	KARTAR	8	KERT	C C	KIWANIS	A
ISLAND	В	JOSTE	8	KASHWITNA	В	KERWIN	č	KIZHUYAK	ē
ISOM	В	JOY	8	KASILCF	Ā	KESSLER	č	KJAR	Ö
ISTOKPOGA	υ	JUBILEE	С	KASKI	В	KESWICK	D	KLABER	С
ITS#Q0I	8	JUOD	D	KASCTA	C	KETCHLY	В	KLAPATH	B/D
IUKA	C	JUDITH	В	KASSLER	A	KETTLE	8	KLAUS	A
IVA	C	JUDKINS	C	KASSCA	C	KETTLEMAN	в	KLAWASI	C
IVAN	В	JUDSON	8	KATAMA	В	KETTNER	Č	KLEJ	В
IVES	8	JUDY	C 1)	KATEMCY KATC	C	KEVIN KLMALNEF	C	KLICKER KLICKITAT	C C
IAINZ	Ĉ	JUGE T JUGH ANDLE	3	KATHINE	8	KENEENAN	A	KLINE	8
I ZAGURA	č	JULES	8	KATULA	8	KEYA	B	KL INESVILLE	Č/D
IZEE	č	JULESBURG	Ā	KATY	č	KEYES	ŭ	KLINGER	В
	-	JUL I AETTA	8	KAUFFAN	D	KEYPORT	Ċ	KLGNDIKE	D
JABU	C	JUMPE	В	KAUPC	A	KEYTESVILLE	D	KLONE	e
JACAGUAS	В	JUNCAL	С	KAVETT	D	KEZAR	8	KLOOCHMAN	В
JACANA	D	JUNCOS	D	KAHAIHAE	C	KIAWAH	C	KLOTEN	В
JACINTO	В	JUNC TION	В	KAWAIHAPAI	8	KIRGIE	В	KLUTINA	В
JACK CREEK	В	JUNEAU	В	KAWBAWGAM	C	KICKERVILLE	8	KNAPPA	8
JACKLIN JACKNIFE	8 C	ATAINUL ZUINUL	С	KAWICH KAWKAWLIK	A C	KIDC KICHAN	В С	KNEELAND KNIFFIN	C C
JACKS	Ď	10MD	8	KEAAU	Ď	KIEHL	A	KNIGHT	č
JACKSON	В	JUNQUITOS	č	KEAHUA	8	KIEV	В	KNIK	В
JACKSONVILLE	Č	JURA	č	KEALAKEKUA	Č	KIKONI	В	KNIPPA	Ď
JACU8	D	JUVA	В	KEALIA	D	KILARC	D	KNOB HILL	В
JACOBSEN	D	JUVAN	D	KEANSBURG	0	KILAUEA	8	KNCWLES	В
YEODAL	C			KEARNS	8	K I L BOU≯NE	Α	KNOX	6
JACQUES .	C	KAALUALU	A	KEATING	C	KILBURN	Α	KNULL	В
JACQUITH	C	KACHEMAK	8	KEAUKAHA	D	KILCHIS	C	KNUTSEN	A
JACHIN JAFFREY	8 A	KADA SHAN KADE	e C	KEAWAKAPU KEBLER	8 8	K IL DCR K IL GCRE	C 8/D	KOBAR KOCh	C
JAGUEYES	В	KADGKA	8	KECH	Č	KILKENNY	8	KODAK	č
JAL	8	KAUCKA	8	KECKO	8	KILLBUCK	C/D	KODIAK	В
JAMES CANYON	B/C	KAENA	õ	KECRCN	č	KILLEY	8	KOEFLER	č
JAMESICHN	C	KAHALUU	D	KEEFERS	C	KILLINGWURTH		KOELE	В
JANE	C	KAHANA	8	KEEGAN		KILLPACK	C	KOEPKĖ	В
JANISE	C	KAHANUI	В	KEEI	0	KILMERQUE	C	KOERL ING	В
JANSEN	A	KAHLER	8	KEEKEE	В	KILCA	A	KOGISH	D
JARBUE	C	KAHOLA	В	KEENE	Ç	KILLHANA	A C	KOHALA	Α
JAKITA JARRE	C B	KAH SHEETS KAHUA	D D	KFENC KEG	C B	KILWINNING KIM	В	KOKE	8
JARVIS	е	KAIKLI	υ	KEHENA	Č	KIMAMA	В	KOKCKAHI	Ď
JASPER	P	KAILUA	A	KEIGLEY	č	KIMBALL	č	KOKOMO	8/0
JAUCAS	A	KAIMU	A	KEISER	В	KIMBERLY	В	KOLBERG	В
AVAL	В	KAINALIU	A	KEITH	8	KIMBRCUGH	C	KOLEKGLE	C
JAY	C	KAIPCIOI	8	KEKAHA	В	KIMMERLING	C	KOLLS	D
JAYEM	8	KAIWIKI	A	KEKAKE	D	KIMO	С	KOLCA	С
JAYSDN	D	KALAE	в	KELLER	C	KINA	D	KOLCKOLC	8
JEAN	A	KALAMA	C	KELLY	D	KINCC	A	KONA	D
JEANERFTIF JEAN LAKF	C B	KALAPAZOO KALAPA	В В	KELN KELSEY	C	KINGFISHER KINGHURST	8 8	KONAWA Konner	B C
JE006	ΰ	KAL AL'PAPA	0	KELSC	č	KINGMAN	C	KONCKTI	č
JEFFELSON	В	KALIFONSKY	č	KELTNER	8	KINGS	Č/D	KOCLAU	č
JEKLFY	c	KALIHI	ā	KELVIN	č	KINGSBURY	0	KOGSKIA	C
JELM	Ð	KALISPELL	A	KEMCC	В	KINGSLEY	В	KOOTENAI	A
JENKINS	В	KALKASKA	A	KEMPSVILLE	В	KINGS RIVER	C	KOP I AH	С
JENKINSON	D	KALMIA	В	KEMPTON	8	KINGSTON	8	KOPP	В
JENNESS JENNINGS	В	KALOKO	C	KENAI	c	KINGSVILLE	C	KOPPES	8
JEHVA.	C	KAL OLGCH KAL SIN	E C	KENANSVILLE	A C	KINKEAD	D B	KORCHEA Kornman	8 8
JERAULD	0	KAMACK	в	KENCALA KENCALL	8	KINKEL	Ď	KOSPOS	Č
JEK ICHO	č	KAMAKJA	A	KENCALLVILLE	В	KINMAN	č	KOSSE	Ď
JEROME	н	KAMADA	В	KENESAW	8	KINNEY	В	KOSTER	Č
JERKY	С	KAMACLE	8	KENMOOR	В	KINNICK	C	KOSZTA	в
JESBEL	0	KAMPAR	b	KENNALLY	В	KINKEAD	D	KOUTS	В
JESSE CAMP	C	KANASEC	8	KENNAN	В	KINRUSS	D	KOVICH	C
JESSUP	C	KANAKA	в.	KENVEBEC	В	KINSTON	C	KOYEN	В
JETT	9	KANAPAHA	A/0	KENNEDY	8	KINTGN	C	KOYUKUK KRACE	В
71007 71007	C C	KANDIK KANE	8 8	KEVVEA	B A	KINZEL KIGNA	8 8	KRANZBURG	8 8
JIMENSZ	č	KANECHE	В	KENNEY LAKE	ĉ	KIPLING	Ď	KRATKA	č
JIMICHN	č	KANE PUU	8	KENC	Ď	KIPP	č	KRAUSE	Ā
J .33	č	KANLEE	В	KENCHA	Ď	KIPPEN	B	KREAMER	
10905	C	KANGSH	č	KERSAL	8	KIPSCN	c	KREPLIN	В
JOCITY	В	KANZA	Č	KENSPUR	Α	KIRK	8/D	KRENTZ	8
JOFL	b	KAPAA	A	KENT	D	KIRKHAM	C	KRESSON	C
JOES	8	KAPAPALA	В	KENYON	C	KIRKLAND	D	KRU#	D
JOHNS JOHNSBURG	C D	KAPCO	9	KEC	8	KIRKTCN	8	KRUSE	8
JOHNSEN	b D	KAPSWSIN KAPUHIKANI	E E	KECLDAR KECMAH	B C	KIRTLEY	8 C	KRUZOF KUBE	а В
JOHNSEN	8/0	KAPUPIKANI	L B	KECTA	Č	KIRVIN	D L	KUBLER	Č
JOHNSWIDE	8	KAKDE	Č	KECHAS	0	KISSICK	Ď	KUBL I	Č
JOICE	õ	KARHEEN	i,	KEPLER	č	KISTLER	C/D	KUCERA	8
JULIET	Č	KARLAN	č	KERBY	В	KITCHELL	В	KUCK	С
JONESVILLE	A	KARLIN	A	KERMEL	В	KITCHEN CREEK	В	KUHL	D

A BLANK MYDROLOGIC SOLL GROUP IMPLICATES THE SOLL GROUP HAS NOT BEEN DETERMINED TWO SOLL GROUPS SUCH AS B/C INDICATES THE DEALHED/UNDERLINED SITUATION

KUKATAU	A	LANE	С	LEACVILLE	В	LICKCALE	D	LOLAK	D
KULA	В	LANEY	В	LEAF	D	LICKING	C	LOLALITA	В
KULAKALA	B/C	LANG	B/D	LEAHY	В	LICKSKILLET	D	LOLEKAA	B
KULLIT	В	LANGFORD	C	LEAL	В	LIDDELL	D	LOLETA	C/D
KUMA	8	L ANGHE I	В	LEAPS	C	LIEBERMAN	C	LOLC	A
KUNTA	В С	LANGLEY LANGLOIS	C	LEATPAM LEAVENWERTH	C B	LIEN LIGGET	D B	LOLCN Loma	A C
KUNUWEIA	D	LANGELA	8	LEAVITT	8	LIGHTNING	D	LOMALTA	0
KURO KUSKOKWEM	D	LANGRELL	В	LEAVITTVILLE	В	LIGNUM	č	LOMAX	В
KUSLINA	D	LANGSTON	č	LEBANCN	c	LIGON	ō	LOMIRA	В
KUTCH	D	LANIER	В	*LEBAR	В	LIHEN	A	LONDE	С
KUTZTOWN	В	LANIGER	B	LEBEC	В	LIHUE	В	LONEPINE	С
KAICHVK	8	LANKBUSH	8	LEBO	С	LIKES	A	LONERIDGE	В
KALE	D	LANKIN	C	LEBSACK	C	LILAH	A	LCNE ROCK	A
KYLER	D	LANKTREE	C	LECK KILL	В	LILLIWAUP	A B	LONETREE	В
LA BARGE		LANDAK	B B	LEDBEDER	B	LIMA LIMANI	8	LONGFORD LONGLOIS	C B
LABETTE	B C	LANSDOWNE	ь	LEDGEFORK LEDGER	Ĉ	LIMBAR	В	LONGMARE	В
LABISH	D	LANSING	В	LEDRU	Ď	LIMERICK	Č	LONGMONT	č
LA BOUNTY	č	LANTIS	В	LECY	•	LIMON	č	LONGRIE	č
LA BRIER	Č	LANTON	ε	LEE	D	LIMONES	В	LONGVAL	В
LACAMAS	C/O	LANTCNIA	В	LEEDS	С	LINCCLN	A	LONG VALLEY	В
LA CASA	С	LANTZ	ε	LEEFIELD	С	LINCROFT	A	LONGVIEW	С
LAC I TA	С	LAP	D	LEELANAU	A	LINDLEY	С	LONCKE	В
LACKAWANNA	C	LAPALMA	C	LEEPER	D	LINDSEY	D	LONTI	C
LACONA	C	LAPEER	В	LEESVILLE	B/C	LINESIDE	c	LOOKQUT	c
LACOTA	0	LAPINE	A	LEETCN	C C	LINDSTROM	В С	LOON LOPER	8
LACY	В	LAPLATTA LAPORTE	C	LEETCNIA LEFCR	В	LINDY	č	LOPEZ	Ď
LADDER	D	LA POSTA	A	LEGLER	В	LINGANORE	В	LORADALE	č
LADELLE	В	LA PRAIRIE	В	LEGCRE	В	LINKER	В	LORAIN	Č/D
LADCGA	Č	LARABEE	В	LEHEW	C	LINKVILLE	В	LORDSTOWN	C
LADUE	С	LARCHMOUNT	В	LEHIGH	С	LINNE	С	LORELLA	0
LADYSMITH	D	LARDELL	C	LEPMANS	D	LINNET	D	LORENZO	A
LA FARGE	В	LAREDO	В	LEHR	В	LINNEUS	В	LORETTO	В
LAFE LA FONDA	D	LARES	C	LEICESTER	C B	LINO	C D	LORING	c
	C B	LARGENT	0	LEILEFUA	D	LINSLAW	_	LOS ALAMOS	C C
LAFONT	В	LARGC Larimer	C B	LELA LELAND	0	LINT	8 8	LOS BANOS LOSEE	В
LAGONDA	č	LARKIN	e	LEMETA	Ď	LINVILLE	B	LOS GATOS	В
LA GRANDE	Č	LARKSON	č	LEMPSTER	C/D	LINHCOD	A/D	LOS GUINEOS	c
LAHAINA	В	LA ROSE	B	LEN	Č.	LIPAN	D	LOS OSOS	č
LA HOGUE	В	LARRY	D	LENA	A	LIPPINCOTT	8/D	LGS ROBLES	8
LAHONTAN	D	LARSEN	D	LENAPAH	D	LIRICS	В	LOS TANOS	В
LAIDIG	C	LARUE	A	LENAMEE	B/D	LIRRET	D	LOST CREEK	В
LAIDLAW	В	LARVIE	D	LENNEP	D	LISADE	В	LOST HILLS	c
LAIRDSVILLE	D	LAS	С	LENCIR	D	LISAM	ε	LOS TRANCOS	D
			_			4.46054			
LAIREP	D	LAS ANIMAS	C	LENCX	В	LISBEN	В	LOSTWELLS	В
LAIREP La jara	C	LASAUSSES	С	LENZ	В	LISMAS	D	LOTHAIR	C
LAIREP La jara Lake	C A	LASAUSSES LAS FLORES		LENZ LEC	8 8	LISMAS LISMCRE	0 8	LOTHAIR LOTUS	C B
LAIREP LA JARA LAKE LAKE CHARLES	C A D	LASAUSSES LAS FLORES LASHLEY	C D	LENZ LEC LEON	В	LISMAS LISMCRE LITCHFIELD	D B A	LOTHAIR LOTUS LOUDON	С В С
LAIREP La jara Lake	C A	LASAUSSES LAS FLORES	С	LENZ LEC	8 8 A/O	LISMAS LISMCRE	0 8	LOTHAIR LOTUS	C B
LAIREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEMELEN LAKEMURST	C A D 8 B A	LASAUSSES LAS FLORES LASHLEY LASIL	C C C	LENZ LEC LEON LECNARD	B B A/O C B D	LISMAS LISMCRE LITCHFIELD LITHGOW	D B A C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE	C C C B
LAIREP LA JARA LAKE LAKE CHARLES LAKF CREEK LAKEMELFN LAKEHURST LAKE JANEE	C A D B B A	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS POSAS LASSEN	C C C C	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LEONIDAS	B B A/O C B D B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE	D B A C C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG	C B C C B B
LAIREP LA JARA LAKE LAKE CHARLES LAKE CHEEK LAKEHELFN LAKEHELFN LAKEHURST LAKE JANEE LAKELAND	C A D B A A	LASAUSSES LAS FLORES LASHLEY LASHL LAS LUCAS LAS POSAS LASSEN LASSEN LASTANCE	C C C D B	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA	B B A/O C B D B	LISMAS LISMARE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLE	D B A C C C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG LOUP	C C C B B
LAIREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHLEFN LAKEHURST LAKE JANEE LAKELAND	C A D B A A A D	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS	C C C D B D	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY	B B A/O C B D B C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLE LITTLEBEAR LITTLEFIELD	D B A C C C D A	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOUPDES	C B C C B B D C
LAIREP LAYE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEUDTT	C A D B A A A D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAH	C C C C B C C	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNARDTCWN LECNIDAS LECTA LEPLEY LERDAL	8 8 A/O C 8 D 8 C D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLEFIELD LITTLEF PCLE	D B A C C C D A D	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG LOUP LOURDES LOUVIERS	C B C C B B D C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKE JAND LAKEMONT LAKEPORT LAKE FORT	C A D B A A D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS YEGAS LATAH LATAHCD	C C C C C C C C C C C C C C C C C C C	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY LERDAL LERCY	8 8 A/O C 8 D 8 C D C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLEFOLE LITTLEFOLE LITTLEFON	D B A C C C D A D D	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOUVIERS LOVEJOY	С В С С В В В С С С С С В
LATREP LAYE CHARLES LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHÜRE LAKESHÜRE LAKESHÜRE LAKESÖL	C A D B A A A D B D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAH	C C C C C C C C C C C C C C C C C C C	LENZ LEC LEON LECNARD LECNARDO LECNARDICWN LECNIDAS LECTA LEPLEY LERDAL LERCY LERCY	B B A/O C B D C C B C C B C D C B B C B B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLEFIELD LITTLEF PCLE	D B A C C C D A D D B B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG LOUP LOUPES LOUVIERS LOVEJOY LOVELAND	C B C C B B D C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHLEN LAKEHURST LAKE JANEE LAKE JAND LAKEMONT LAKEPORT LAKEPORT LAKESHORE	C A D B A A A D B D B B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATAHCD LATANIER	C D B D C C D D	LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY LERDAL LERCY	B B A/O C B D B C D C B B C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITLEFIELD LITTLE PCLE LITTLETON LITTLE MOOD	D B C C C D A D D B B C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOUVIERS LOVEJOY	C B C C B D C D C
LATREP LA JARA LAKE LAKE CHARLES LAKF CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMINT LAKEMINT LAKEGOT LAKESHIDRE LAKESHIDRE LAKESOL LAKCTON	C A D B A A A D B D B	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS VEGAS LATAH LATAHCD LATANIER LATHAM	C C C C C C C C C C C C C C C C C C C	LENZ LECN LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC	B B A/O C B D C C B C C B C D C B B C B B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEEBEAR LITTLEFIELD LITTLE PCLE LITTLETON LITTLE WOCD LITTLE	D B A C C C D A D D B B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELL	C 8 C C 8 8 D C D C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHLEFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHÜRE LAKESÜL LAKCTON LAKEVIEW LAKEVIEW LAKEWIN LAKEWIN LAKEWOOD	C A O B B A A A D B D B B C A A	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATINA LATINA LATOM LATOM		LENZ LEC LECON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESHC LESTER LESTER LESUEUR	8 8 A/O C B D B C D C B B C D C B B C B B C B B B C B B B B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE POLE LITTLE POCE LITTLE WOGD LITTLE LITTLE LITTLE WOGD LITZ LIVERMORE LIVINGSTON	D B A C C C D D B B C C A D D A	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELL LOVELOCK LOWELL LOW	C B C C C B D C C C C C C C B B D C D C
LATREP LAYE CHARLES LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHÜRE LAKESÜL LAKCTON LAKEVIEW LAKEWIÖD LAKEWIÖD LAKEWIÖD LAKE	C A D B A A A D B D B B C A A B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATAHED LATANIER LATHAM LATOM LATOM LATOM LATOM		LENZ LEC LEON LECNARD LECNARDO LECNARDICWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESHC LESTER LE SUEUR LET SUEUR	BBA/OCBBCCBBBCCDBBCCCBBCCCBBCCCBBCCCBBCCCBB	LISMAS LISMCRE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITTLE BEAR LITTLEFIELD LITTLE PCLE LITTLE HOCD LITTLE HOCD LITZ LIVERMORE LIVERMORE LIVERMORE LIVERA	D B A C C C D D B B C A D C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOUVIERS LOVELOY LOVELAND LOVELL LOWELL LOWELL LOWELL LOWYILLE	C B C C B B C C C C C C C B B B C C C B B B C C C C B B B C C C C C C C C C C C C C C C C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHURE LAKESHURE LAKESHURE LAKEVIEW LAKEVIEW LAKEWIODD LAKI LAKI	C A D B B A A A D B D B B C A A B A	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS VEGAS LATAH LATAHCO LATANIER LATHAR LATINA LATINA LATOM LATCNIA LATTY LAUDERDALE	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LENZ LEC LEON LECNARD LECNARDO LECNARDOTOMN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESSLIE LESSLIE LES SUEUR LETA	8 8 A / O C B C D C B B C C D B B C C D B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D C C B B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEFIELD LITTLEFIELD LITTLE PCLE LITTLETON LITTLE HOUD LITZ LIVERMORE LIVINGSTON LIVCAA LIZE LIZANT	D B A C C C D A D D B B C A D A C C &	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOVEJOY LOVELAND LOVELL LOWELCK LOWELL	C B B D C C C C C B B B B B B
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHLEFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEMUNT LAKESOL LAKCTON LAKEVIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWOOD LAKI LAKI LAKIN LAKOMA	C A D B B A A A D B D B B C A A B A D	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS YEGAS LATAH LATANIER LATHAM LATINA LATOM LATIY LAUDERDALE LAUGEROALE LAUGENOUR		LENZ LEC LEON LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY LERCAL LERCY LESHARA LESHC LESSTER LESTER LESTER LESTER LETAL	B B A / O C B C C D B B C C D B B C C D D D D D D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE FIELD LITTLE WOGD LITTLE LIVERMORE	D B A C C C D A D D B B C A D A C & C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVELOY LOVELAND LOVELL LOVELOCK LOWELL LOWELL LOWYLLE LOWYLLE LOWYLLE LOWYLLE LOYAL	C 8 C C C C C C C C C C B B B B B B B B
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMINT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIOOD LAKI LAKI LAKI LAKI LAKI LAKI LAKI LAKI	C A O B B A A A D B D B B C A A B A D D A	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS VEGAS LATAH LATAHED LATANIER LATHAM LATIOM LATOM LATOM LATOM LATOM LATOM LATOM LAUGENOUR LAUGHOUR LAUGHOUR LAUGHOUR		LENZ LEC LEON LECNARD LECNARDO LECNARDOTOMN LECNIDAS LECTA LECTA LEPLEY LERDAL LESHARA LESHC LESHC LESTER LE SUEUR LETA LETHA LETHA	8 8 A / O C B C D C B B C C D B B C C D B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D C C B B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B C D B B B B	LISMAS LISMCRE LITCHFIELD LITHGOM LITHIA LITIMBER LITLEBEAR LITTLEBEAR LITTLEFIELD LITTLE PCLE LITTLETON LITTLE WOCD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIZZANT LOBDELL LUBELVILLE	D B A C C C D A D D B B C A D A C & C C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELL LOWELL LOWELL LOWELL LOWELL LOWELL LOWYLLE LOWAL LOVAL LOYALTON LOYSVILLE	C B C C C C C C C C C C C B B B D C D C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHORE LAKESHORE LAKESUL LAKCTON LAKEVIEW LAKEVIEW LAKEWOOD LAKI LAKI LAKI LAKIN LAKOMA LALAU LA LANDE	C A O B B A A A D B D B B C A A B A D A C	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATINA LATINA LATOM LAUGENOUR LAUGENOUR LAUGENOUR LAUGHIN LAUMAIA		LENZ LEC LECON LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LE SUEUR LETTA LETTA LETHANT LETHANT LETHANT LETHANT LETHANT LETHANT LETHANT LETHANT LECONARDO LESAZA LETHANT LETH	B B A / O C B C C D B C C D C C C C C C C C C C C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE POLE LITTLE POLE LITTLE WOGD LITTLE LIVERMORE LIVINGSTON LIVCNA LIZE LIZEANT LOBDELL LUBELVILE LCBERG	D B A C C C D A D D B B C A D A C & C C B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELL LOVELOCK LOWELL LOWELL LOWYLLE LOWYLLE LOWYLLE LOWYLLE LOWYLLE LOYALTON LOYALTON LOYALTON LOYAND	C 8 C C C C C C C C C C C C B B B D D D D D
LAIREP LAYE CHARLES LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHONT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIN LAKEWIN LAKEWOOD LAKI LAKIN LAKIN LAKANA LALANDE LALANDE LALANDE LALANDE LALLEE	C A O B B A A A O B D B B C A A B A O A C D	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATHAM LATINA LATOM LATOM LATIY LAUDERDALE LAUGHLIN LAUGHLIN LAUGHLIN LAUGHLIN LAUMAIA LAURES LASHEY LAUMAIA LAUREL LASHEY LAUMAIA LAURES LASHEY LAUMAIA LAUREL LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHE		LENZ LEC LEON LECNARD LECNARDO LECNARDOT LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESHC LESHC LES LE LE LES LE LES LE LE LES LE L	B B A/O C B C D B B C D D C B B C D D C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B D C D D C C B D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D D C D D D C D D D C D D D C D D D D C D D D D D D D D D D D D D D D D D D D D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLE FIELD LITTLE FIELD LITTLE FOOD LITTLE WOOD LITZ LIVERMORE LIVERMORE LIVINGSTON LIZE LIZANT LOBDELL LUBELVILLE LCBERG LUBERT	D B A C C C C D A D D B B C A D A C B C C B B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELAND LOVELL LOWELL LOWRY LOWVILLE LOYAL LOYAND LOYSVILLE LOZAND LOZIER	C 8 C C C C C C C C C C C C B B B D D B D D B D
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESHORE LAKESHORE LAKESUL LAKCTON LAKEVIEW LAKEVIEW LAKEWOOD LAKI LAKI LAKI LAKIN LAKOMA LALAU LA LANDE	C A O B B A A A D B D B B C A A B A D A C	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATANIER LATINA LATINA LATOM LATCNIA LATTY LAUDERDALE LAUGENOUR LAUGENOUR LAUMAIA LAUMAIA LAUMAIA LAUMAIA LAUREL LAUREL LAURET		LENZ LEC LEON LECNARD LECNARDO LECNARDTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LE SUEUR LETCAER LETTHAE LETTHAE LETTHAE LETTER LETTERBCX LEYAN	8 8 A / O C B B C C D B B C C D B B C C D B B B C C D B B B C C D B B B C C D B B B C C D D C C B B A	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE POLE LITTLE POLE LITTLE WOGD LITTLE LIVERMORE LIVINGSTON LIVCNA LIZE LIZEANT LOBDELL LUBELVILE LCBERG	D B A C C C D A D D B B C A D A C & C C & & C C & & & C C & & & & C C & & & & & & & & & & & & & & & & & & & &	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOVELL LOVELOCK LOWELL LOWELL LOWYLLL LOWYLLL LOWYLL LOWYLL LOYALTON LOYALTON LOYALTON LOYALTON LOYSVILLE LOZAND LOZIER LUZAND LOZIER LUZAND LOZIER	C 8 C C C C C C C C C C C C C C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMINT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIOOD LAKIN LAKIN LAKIN LAKOMA LALANDE LALIE LAM LAMAR LAMAR LAMAR LAMAR LAMAR LAMAR LAMAR	C A D B B A A A D B D B B C A A B A D D B C D B C D B C D D D	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATHAM LATINA LATOM LATOM LATIY LAUDERDALE LAUGHLIN LAUGHLIN LAUGHLIN LAUGHLIN LAUMAIA LAURES LASHEY LAUMAIA LAUREL LASHEY LAUMAIA LAURES LASHEY LAUMAIA LAUREL LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHEY LASHEY LAUMAIA LAUREL LASHEY LASHE		LENZ LEC LEON LECNARD LECNARDO LECNARDOT LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESHC LESHC LES LE LE LES LE LES LE LE LES LE L	B B A/O C B C D B B C D D C B B C D D C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B C D D C C B D C D D C C B D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D C D D D C D D D C D D D C D D D C D D D D C D D D D D D D D D D D D D D D D D D D D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE WOUD LITTLE WOUD LITY LIVERMORE LIVERMORE LIVINGSTON LITCANT LOBDELL LUBELVILLE LUBELVILLE LUBELVILLE LUBERT LCBENG LOBERT	D B A C C C C D A D D B B C A D A C B C C B B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELAND LOVELL LOWELL LOWRY LOWVILLE LOYAL LOYAND LOYSVILLE LOZAND LOZIER	C B C C C C C C C C C C C B B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D D B B D D D B B D D D B B D D D B B D D D B B D D D B B D D B B D D D B B D D D B B D D D B B D D D B B D D D B B D D D B B D D D B B D D D B D D D B D D D D D D D D D D D D D D D D D D D D
LAIREP LAYE CHARLES LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMONT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKIN LAKIN LAKOMA LALAOU LA LANOE LALIE LAMI LAMOE LALIE LAM	C A D B B A A A D B D B B C A A B A D A C D P B B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS YEGAS LATAH LATANIER LATANIER LATINA LATIOM LATINA LATOM LATIY LAUDERDALE LAUGERIOUR LAUGHLIN LAUREL LAUR	C D C C C D B D C C C D D D D B C 8 B B B C C B	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDTCWN LECNIDAS LECTA LEPLEY LERCY LESHARA LESHC LESLIE LESTER LESTER LETA LETCHER LETTA LETCHER LETTERT LETTERT LETTERT LETTERT LETTERT LETTERBCX LEVAN LEVAN LEVAN LEVAN LEVAN	8 8 / O C B D C C D C C B B C C D C C B B C C D C C B B C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C B A C C D D C C D D C C D D C C D D C C D D C C D D C C D D C C D D C D C D D C D D C D D C D D C D D C D D C D D C D D C D D D C D D D C D D D C D D D D D D D D D D D D D D D D D D D D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEFIELD LITTLEFIELD LITTLE PCLE LITTLEFON LITTLE WOCD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIZANT LOBELL LUBELVILLE LCBERG LUBERT LCBITOS	0 B A C C C D A D D B B C A D A C & C C B B C C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOVELAND LOVELL LOVELOCK LOWELL LOWFLL LOWYLLE LOYAL	C 8 C C C C C C C C C C C C C C C C C C
LAIREP LA JARA LAKE LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHUNT LAKEPORT LAKESOL LAKCTON LAKEYIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKIN LAKIN LALANDE LALANDE LALANDE LALANDE LALANDE LAMBERT LAMBERT LAMBETH	C A D B B A A A D B D B B C A A B A D A C D P B B C	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS YEGAS LATAH LATANIER LATANIER LATINA LATOM LATOM LATIY LAUDERDALE LAUGHLIN LAUGHLIN LAUREL LAURELHURST LAUREN LAUREN LAVEEN		LENZ LEC LEON LECNARD LECNARDO LECNARDOTO LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESHC LESHC LETA LETTCHER LETTHERT LETTERT LETTERT LETTERT LETTERT LETTERBCX LEVAN	8 8 / 0 C B D C C B B C C D C C B A C C C B C C C B C C C B C C C B C C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C C B C C C C C C C C C C C C C C C C C C C C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE WOUD LITTLE WOUD LITY LIVERMORE LIVERMORE LIVINGSTON LITCANT LOBDELL LUBELVILLE LUBELVILLE LUBELVILLE LUBERT LCBENG LOBERT LCBENG LOCEY LOCKSA LCCKE LCCKEREY	0 8 A C C C C D A D D B B C A D A C B C C B B C C B B C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVELOV LOVELL LOVELOCK LOWELL LOWAL LOWALL LOYAL LOYA	C 8 C C C C C C C C C C C C C C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESOL LAKETON LAKEVIEW LAKEWIOD LAKIN LAKIN LAKIN LAKIN LAKIN LAKIN LAKIN LAKIN LAKIN LALIE LAMI	C A D B B A A A D B D B B C A A B A D A C D D B B C D B B C D	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAH LATANIER LATANIER LATANIER LATINA LATINA LATOM LATCNIA LATTY LAUDERDALE LAUGENOUR LAUGENOUR LAUMAIA LAUREL LAVEEN LAVALLEE LAVEEN LAVELDO	C D C C C D B D C C C D D D B C R & B C C B B B G D	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDICWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LE SUEUR LETCA LETCHER LETTHA LETTHA LETCRT LETTERBCX LEVASY LEVASY LEVASY LEVIS	8 8 / O C B B C D D C C B B C C D C C B B C C D C C C C	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLEFIELD LITTLE POLE LITTLE HOCD LITTLE LIVERMORE LIVINGSTON LIVCNA LIZE LIZANT LOBELL LUBELVILLE LCBERG LCBERG LCCEY LOCKE LCCKERBY LOCKERBY LOCKHAPD	D B A C C C D A D D B B C A D A C & C C B B C B B C B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOVELL LOWELOK LOWELL LOWYLLE LOWYLLE LOYALTON	C 8 C C C C B B B D D C C C C C C C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMINT LAKEPORT LAKESHORE LAKESHORE LAKESUL LAKCTON LAKEVIEW LAKEWIOD LAKI LAKI LAKIN LAKOMA LALAU LA LAU LA LAU LA LAU LA LAU LAMBETT LAMBETT LAMBETT LAMBETT LAMBETT LAMBETT LAMBETN LAMON	C A D B B A A A D B D B B C A A B A D A C D P B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B C D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATANLE LATANIER LATANIER LATINA LATINA LATOM LATOM LATOM LATOM LATOM LATOM LATOM LATOM LAUGENOUR LAUGENOUR LAUGENOUR LAUGHLIN LAUREL LAUREN LAVELDO LAVEN LAVELOO LAVFRNIN		LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LESTER LETA LETTA LETTHENT LETTERBCX LEVAN LEVASY LEVASY LEVASY LEVASY LEVASY LEVERETT LEVISTER LEWIS	8 8 / O	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE POCE LITTLE WOGD LITTLE LIVERMORE LOBORE LOBORE LOBORE LOBORE LOCKERE LOCKERE LOCKERE LOCKERE LOCKHART	O B A C C C D A D D B B C A D A C & C C C B B C B B C B B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVELOVEL LOVELL LOVELOCK LOWELL LOWELL LOWILLE LOWALTON LOYSVILLE LOYALTON LOYSVILLE LOZAND LOZIER LUALUALEI LUALUALEI LUBBOCK LUBBOCK LUBBCCK LUBBCCK LUBBCCK LUBCE LUCE LUCECALE	C 8 C C C C C C C C C C C C C C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMINT LAKESTITE LAKESTITE LAKESTITE LAKESTITE LAKESTITE LAKESTITE LAKEWID LAKEWID LAKIN LAKOMA LALANDE LALLE LAME LAMAR LAMOR LAMO LAMO LAMO LAMO LAMO LAMO LAMO LAMO	C A D B B A A A D B D B B C D B B C D B B B C D B B B C D B B B C D B D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATHAM LATOM LATOM LATOM LATOM LATOM LATOM LATOM LAUGHLIN LAUGHLIN LAURELHURST LAUREL LAURELHURST LAUREN LAVELN LAVEL	CO 8000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARDO LECNARDO LECNARDO LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESTER LESTER LET LESTER LETTHA LETTHER LETTERT LETTERT LETTERT LETTERT LEVAN LEVAN LEVAN LEVAN LEVIATHAN LEVIS LEWISBERRY LEWISBERRY LEWISBERRY LEWISBURG	8 8 / 0	LISMAS LISMCRE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE FOLE LITTLE WOUD LITZ LIVERMORE LIVINGSTON LIVCAA LIZE LIZANT LOBDELL LUBELVILLE LUBELVILLE LUBELVILLE LUBERG LOBERT LCBITOS LOCKE LCCKE LCCKE LCCKE LCCKE LCCKEARD LOCKHART LCCKPCKT	0 8 A C C C D A D D B B C A D A C & C C B B C C B B C B B D	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVEJOY LOVELAND LOVELL LOVELOCK LOWELL LOWAL LOWAL LOYAL LOYAL LOYAL LOYAL LOYAL LOYAL LOZAND LOZIER LUALUALEI LUBBOCK LUBRECHT LUCAS LUCEDALE LUCENEL LUCENEL	C 8 C C C C C C C C C C B B B D D C C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIN LAKEWIODD LAKIN LAKEWOOD LAKIN LAKOMA LALANDE LALIE LAM LAMAR	C A D B B A A A D B D B B C A A B A D A C D P B B C D B D A	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS VEGAS LATAH LATANICE LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUREL HURST LAUREL HURST LAUREL HURST LAUREL LAVELLE LAVEEN LAVEEN LAVEEN LAVEEN LAVINA LAVINA LAVINA LAVAINA	CD 800000000808880000080800008088800008	LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LETA LETCHER LETHA LETTERBCX LEYMA LEVASY LEVASY LEVASY LEVISBERRY LEWISBERRY LEWISBERTY LEWISBERRY LEWI	8 8 / O	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE PCLE LITTLE POCE LITTLE WOGD LITTLE LITTLE WOGD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIZANT LOBDELL LUBELVILLE LCBERG LOBERT LCBITOS LOCEY LOCKSA LCCKERBY LOCKHAPD LOCKHART LCCKPCRT	D B A C C C D A D D B B C A D A C & C C B B C B B D B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISA LOUISBURG LOUP LOURDES LOVEJOY LOVELL LOVELOCK LOWELL	C 8 C C C C B B B D D B D D C C C C C B B C B D D C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHUNT LAKEPORT LAKESOL LAKCTON LAKEYUEW LAKEWIN LAKOWA LALANDE LAMBERT LAMBERT LAMBERT LAMBETH LAMBINGTON LAMONI LAMONI LAMONI	C A D B B A A A D B D B B C A A B A D A C D > D B B C D B D A D	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS YEGAS LATANLE LATANIER LATANIER LATINA LATINA LATIOM LATINA LATOM LATIY LAUDERDALE LAUGENOUR LAUGHLIN LAUREL LAURELHURST LAUREL LAUREN LAVELD LAVELD LAVELD LAVELD LAVELD LAVINA LAVINA LAWAI LAWLEE	CD 2000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDO LECNARDOS LECTA LEPLEY LERCY LESHARA LESHC LESSHER LESTER LESTER LESTER LETA LETCHER LETTA LETCHER LEWISSU LEWISBERRY LEWISBURG LEWISVILLE	8 8 / O 8 C D C B B C D D C B A C C B C D C C C C C C C C C C C C C C C	LISMAS LISMAS LISMARE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE WOOD LITTLE LIVERMORE LOBERT LOBDELL LUBELVILLE LOBERT LOBDELL LUBELVILLE LOBERT LOBLORE LOCKER LOCKER LOCKER LOCKER LOCKHARD LOCKHART LCCKPCKT LCCKWOCD LOCKNOCD	O B A C C C D A D D B B C A D A C & C C B & C C B B C B B D B C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOWELAND LOVELL LOVELOCK LOWELL LOWALL LOYAL LUCEDALE LUCEPALE LUCIEN LUCILE	C 8 C C C C B B B D D B D D C C C C C B B C B B D D B D D C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWIN LAKEWIODD LAKIN LAKEWOOD LAKIN LAKOMA LALANDE LALIE LAM LAMAR	C A D B B A A A D B D B B C A A B A D A C D P B B C D B D A	LASAUSSES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS VEGAS LATAH LATAHCD LATANIER LATHAN LATINA LATINA LATON LATCNIA LATTY LAUDERDALE LAUGEROUR LAUGEROUR LAUMAIA LAUREL LAVERN LAVALLEE LAVERN LAVALLE LAWAI	CD 8000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDOTOMN LECNIDAS LECTA LEPLEY LESHARA LESHC LESSHC LESSHER LETCHER LETTHA LETTHA LETTERBCX LEVASY LEVASY LEVISHERTY LEVISHERTY LEWISBERRY LEWISBERRY LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISTUR LEWISBURG LEWISTUR LEWI	8 8 / 0 C B C C C B C C C B C C C C B	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE PCLE LITTLEFON LITTLE HOCD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIVERMORE LIZANT LOBELL LUBELVILLE LCBERG LUBERT LCBITOS LOCEY LOCKERBY LOCKHAPD LOCKHAPT LCCKWOCD LOCKWOCD LOCKWOCD LOCKST LCCKWOCD LOCKST LCCKWOCD LOCKST LCCKWOCD LOCKST LOCKWOCD LO	0 8 4 C C C D A D D B B C A D A C C C B B C B B D B C D B C D B D B C D B D B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOVEJOY LOVELAND LOVELL LOWELCK LOWELL LOWALL LOWALL LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOZIER LUALUALEI LUBBOCK LUBBOCK LUBBOCK LUCENE LUCERNE LUCERNE LUCERNE LUCIEN LUCILEN LUCILETON LUCILETON LUCKY	C 8 C C C C B B B D D B D D C C C C C B B B D D D C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKEPORT LAKESOL LAKCTON LAKEVIEW LAKEWOOD LAKIN LAKOMA LALANDE LALIE LAM LAMAR LAMAR LAMAR LAMAR LAMAR LAMAR LAMO LAMOUSE	C A D B B A A A D B D B B C A A B A D A C D B B C D B D A D C	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LASSEN LASSEN LASTANCE LAS YEGAS LATANLE LATANIER LATANIER LATINA LATINA LATIOM LATINA LATOM LATIY LAUDERDALE LAUGENOUR LAUGHLIN LAUREL LAURELHURST LAUREL LAUREN LAVELD LAVELD LAVELD LAVELD LAVELD LAVINA LAVINA LAWAI LAWLEE	CD 2000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDO LECNARDOS LECTA LEPLEY LERCY LESHARA LESHC LESSHER LESTER LESTER LESTER LETA LETCHER LETTA LETCHER LEWISSU LEWISBERRY LEWISBURG LEWISVILLE	8 8 / O 8 C D C B B C D D C B A C C B C D C C C C C C C C C C C C C C C	LISMAS LISMAS LISMARE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE WOOD LITTLE LIVERMORE LOBERT LOBDELL LUBELVILLE LOBERT LOBDELL LUBELVILLE LOBERT LOBLORE LOCKER LOCKER LOCKER LOCKER LOCKHARD LOCKHART LCCKPCKT LCCKWOCD LOCKNOCD	O B A C C C D A D D B B C A D A C & C C B & C C B B C B B D B C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOWELAND LOVELL LOVELOCK LOWELL LOWALL LOYAL LUCEDALE LUCEPALE LUCIEN LUCILE	C 8 C C C C B B B D D B D D C C C C C B B C B B D D B D D C C C C
LATREP LA JARA LAKE LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEMUNT LAKENORT LAKESHORE LAKESHORE LAKESHORE LAKESHORE LAKESHORE LAKEVIEW LAKEWIN LAKEWIN LAKEWIN LAKIN LAKOMA LALIE LAMI LAMAR LAMAR LAMAR LAMAR LAMAR LAMAR LAMORI LAMORIT LAMORIT LAMORIT LAMONTA LA	C A D B B A A A D B D B B C A A B A D A C D P B B C D B D A D C B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS YEGAS LATAH LATANIER LATANIER LATINA LATINA LATOM LATOM LATOM LATOM LATOM LATOM LATOM LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUGHLIN LAUREL LAUREN LAVALLEE LAVEEN LAVALLEE LAVEN LAVINA LAWAI LAWAI LAWAI LAWAI LAWLER LAWRENCE LAWRENCE LAWRENCE	CD 2000000000000000000000000000000000000	LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LE SUEUR LETA LETTA LETTHAN LETTHAN LEVIS LEWIS LEWI	8 8 / 0	LISMAS LISMCRE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE PCLE LITTLETON LITTLE WOGD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIZANT LOBDELL LUBELVILLE LCBENG LOBERT LCBITOS LOCKE LCCKERP LCCKERP LCCKERP LCCKPCKT LCCKPCC LCCKPCKT LCCKPCC LCCKPCT LCCK	O B A C C C D A D D B B C A D A C B C C B B C B B D B C D A	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUPES LOUVIERS LOUVIERS LOVELOCK LOWELL LOVELOCK LOWELL LOVELOCK LOWYLLE LOYALTON LOYSVILLE LOYALTON LOYSVILLE LOZAND LOZIER LUALVALEI LUBBOCK LUBRECHT LUCE LUCE LUCEDALE LUCEENE LUCIEN LUCIEN LUCIEN LUCIEN LUCILLETON LUCKY LUGUCKY LUGUCKY LUBOUCKY LUGUCKY LUGUCKY LUGUCKY LUGUCKY LUGUCKY LUGUCKY LUGUCKY LUCUCKY LUCUCKY LUCUCKY LUCUCKY LUCLOUISE LUCCKY LUCCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUCIONILLE LUCCIVILLE LUCCIVILLE LUCCILLE LUCCIVILLE LUCCILLE LUCCILLE LUCCIVILLE LUCC	C 8 C C C C C C C C C C C C C C C C C C
LAIREP LA JARA LAKE CHARLES LAKE CHEEK LAKE CHEEK LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHONT LAKEPORT LAKESOL LAKCTON LAKEYIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKOMA LALANDE LALANDE LALANDE LALANDE LALANDE LAMBERT LAMBERT LAMBERT LAMBERT LAMBETH LAMBONI LAMONIA LA	C A D B B A A A D B D B B C A A B A D A C D S B B C D B D A D C 8 D D B	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATINA LATINA LATION LATOM LATINA LATOM LATOM LATOM LATOM LAUDERDALE LAUGEROUR LAUGHLIN LAUREL LAUREN LAVALLEE LAVEEN LAVELDO LAVFRIN LAVINA LAWAI	00 00000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDO LECNARDO LECNARDO LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LESTER LETTA LETCHER LETTA LETTERBCX LEVAN LEVERETT LETTERBCX LEVAN LEVIS LEWISTUN LEWISBURG LEWISTUN LEWISTUN LEWISTUN LEWISTUN LEWISTUN LEWISTUN LEWISTUN LEWISTUN LEXALORION LIBBINGS LIBBING	8 8 / O B C D C B B C D D C B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B A C C B C D B C C C B B D B C D D C B C C C B B D B C D D C B C C C B B D B C D D C B C C C B B D B C D D C B C D D C B C D D D C B C D D D C B C D D D C B C D D D C B C D D D D	LISMAS LISMAS LISMARE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITTLEBEAR LITTLEFIELD LITTLE HOCO LITTLE LITTLE WOCO LITZ LIVERMORE LIVINGSTON LIVEA LIZANT LOBDELL LUBELVILLE LUBELVILLE LUBELVILLE LUBERT LCBLIGS LOBERT LCCKERBY LCCKER	O B A C C C D A D D B B C A D A C 3 C C 8 8 C B B C B B D B C D A C D C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOWELAND LOVELL LOVELOCK LOWELL LOYALTON LOYSVILLE LOYALTON LOZIER LUALUALEI LUBBOCK LUBRECHT LUCAS LUCE LUCEDALE LUCERNE LUCIEN LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUCODEN	C 8 C C C C B B B D D B D D C C C C C B B B B
LAIREP LA JARA LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHELFN LAKEHUNST LAKE JANEE LAKELAND LAKEHINT LAKESOL LAKCTON LAKEYIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKIN LAMOE LAHIE LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMOLAMO LAMONI LAMON	C A D B B A A A D B D B B C A A B A D A C D B B C D B D A D C B D D B B B B C D B B B C B D B D B	LASAUSSES LAS FLORES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAHCD LATANIER LATHED LATANIER LATHED LATONIA LATONIA LATONIA LATONIA LAUGEROUR LAUGEROUR LAUGEROUR LAUREL LAURENCE LAURE	00 00000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDOTOM LECNIDAS LECTA LEPLEY LESHARA LESHC LESSHC LESSHER LESTER LE SUEUR LETCHER LETTHA LETTERBCX LEFUR LETTHA LETTERBCX LEVASY LEVASY LEVISHERT LEWISBERRY LEWISBERRY LEWISBERRY LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISTUR LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISBURG LEWISTUR LEWISTUR LEWISBURG LEWISTUR LEWISTU	8 8 / O	LISMAS LISMACRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLEFIELD LITTLE POLE LITTLEFON LITTLE WOCD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIVINGSTON LIVCNA LIZE LOBELL LUBELVILLE LCBERG LOBERT LCBITOS LOCEY LOCKERBY LOCKERBY LOCKERBY LOCKHART LCCKERBY LOCKHART LCCKERBY LOCKHART LCCKECT LOCKHARD LOCKHART LCCKECT LOCKHART LCCKWOCD LOCUST LODAR LOCE MA LOCE LOCE MA LOCE MA LOCE LOCE MA LOCE MA LOCE MA LOCE LOCE MA	D B A C C C D A D D B B C A D A C & C C & & C C B B C B B D B C D A C D C D	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISBURG LOUP LOURDES LOVEJOY LOVELAND LOVELL LOWELCK LOWELCK LOWELL LOWYLLE LOYALTON LOYALTON LOYALTON LOYALTON LOZAND LUZIER LUALUALEI LUBBOCK LUBBOCK LUBECHT LUCENE LUCENE LUCENE LUCENE LUCIEN LUCILETON LUCKY STAR LUCKY LUCKY LUCCY LUDEN LUCON	C 8 C C C C B B B D D B D D C C C C C B B B B
LAIREP LA JARA LAKE CHARLES LAKE CHEEK LAKE CHEEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEHONT LAKEPORT LAKESHÜRE LAKEYON LAKEYON LAKEYON LAKEYON LAKEYON LAKEYON LAKEWIN LAKOMA LALAOU LA LANOE LAMPARTINE LAMBETT LAMBETT LAMBETT LAMBETT LAMBETT LAMONIA LAMONI	C A D B B A A A D B D B B C D A D C B D D B B B B B B C D B D A D C B D D B B B B B B B C D B D A D C B D D B B B B B B B B C D B D A D C B D D B B B B B B B B B B B B B B B	LASAUSSES LAS FLORES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS PDSAS LASSEN LATANTE LAS VEGAS LATAH LATANTER LATHAM LATINA LATOM LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUGENOUR LAUMEL LAUREL HURST LAUREL HURST LAUREL HURST LAUREL HURST LAUREL LAUREL LAVEEN LAVEEN LAVEEN LAVEN LAVINA LAWAI LAWLER LAWRENCE LAW	00 00000000000000000000000000000000000	LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOWN LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESTER LESTER LESTER LETTA LETTHENT LETTERBEX LEVASY LEVASY LEVASY LEVERETT LEWIS LE	8 8 / O B C D C B B C D D C B A C C B C D B A D C	LISMAS LISMCRE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE PCLE LITTLE WOGD LITTLE LITTLE WOGD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIZANT LOBDELL LUBELVILLE LCBERG LOBERT LCBLOCKER LCCKERBY LOCKHAPD LOCKHAPD LOCKHART LCCKPCKT LCCKPCC LCCCKPCT LCCKPCCC LCCCKPCT LCCKPCCCC LCCCCCCC LCCCCCCCC LCCCCCCCCC LCCCCCC	D 8 A C C C D A D D B B C A D A C & C C B B C B B D B C D A C D C D C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIE LOUIE LOUISA LOUISBURG LOUP LOURDES LOUVIERS LOVELOCK LOWELL LOWELOCK LOWELL LOWALTON LOYALTON LOYSVILLE LOYALTON LOYSVILLE LOZAND LOZIER LUALUALEI LUBBOCK LUBRECHT LUCE LUCE LUCEDALE LUCEENE LUCEIEN LUCEILETON LUCKY LUCKY LUCKY LUCY LUDON LUCY LUCKY LUDON LUCY LUCHON LUCKY LUDON LUCKN LUDLOW LUCKN	C 8 C C C C B 8 B D D B D D C C C C C B B B B A D C D B
LAIREP LA JARA LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHELEN LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHUNT LAKESHIDRE LAKESOL LAKCTON LAKEYIEM LAKEWOOD LAKIN LAKEWOOD LAKIN LAKAWIN LALANDE LALANDE LALANDE LALANDE LALANDE LALANDE LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMBONI LAMONI LAM	C A D B B A A A D B D B B C A A B A D A C D D B B C D B D A D C B D D B B B D	LASAUSSES LAS FLORES LAS FLORES LASHLEY LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS YEGAS LATAHLE LATANIER LATANIER LATINA LATINA LATOM LATINA LATOM LATIY LAUDERDALE LAUGENOUR LAUGHLIN LAUREL LAURELHURST LAURELHURST LAUREL LAUREN LAVELDO LAVERN LAVELDO LAVERN LAVELDO LAVERN LAVINA LAWINA LAWI	CD 8000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARDO LECNARDO LECNARDO LECNARDO LECNARDO LECNIDAS LECTA LEPLEY LEROAL LESHC LESHC LESHC LESHC LESTER LESTER LETA LETCHER LETA LETCHER LETTA LETTERBCX LEVAN LEVAN LEVAN LEVAN LEVAN LEVAN LEVAN LEVISTUR LEWIS BERRY LEWIS BURG LEWIS TURN LEWIS	8 8 / O 8 C D C B 8 C D D C B A C C B C D B C C C B B D B A D C A	LISMAS LISMAS LISMARE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITTLEFIELD LITTLEFIELD LITTLE MOGD LITTLE LIVERMORE LOBERT LOBDELL LOBERT LOBLET LOCKHARD LOCKHARD LOCKHARD LOCKHARD LOCKHARD LOCKHOLD LOCKT LODAR LOCKHOLD LOCKT LODAR LOCHTOL LOGAN LOGERT LOGGAN LOGGA	D B A C C C D A D D B B C A D A C B C C B B C B B D B C D A C D C D C A	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUISA LOUISA LOUISBURG LOUPE LOURDES LOUVIERS LOVELOV LOWELAND LOVEL LOVELOCK LOWELL LOYAL LOYAL LOYAL LOYAL LOYAL LOYAL LOYAL LOZAND LOZIER LUALUALEI LUBBOCK LUBRECHT LUCAS LUCEDALE LUCEDALE LUCERNE LUCIEN LUCIEN LUCIEN LUCIEN LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUCKY LUDEN LUCKY LUDEN LUCKY LUDEN LUCKY LUDEN LUCKY LUDEN LUCKY LUDEN LUCKY LUDCN LUCKY LUDCN LUCKY LUCKY LUCKY LUCKY LUCKY LUCCN LUCCN LUCKY LUCCN LUCKY LUCCN LU	C 8 C C C C B 8 B D D B D D C C C C B B B B B B B D D C D B C B B B B
LAIREP LA JARA LAKE CHARLES LAKE CREEK LAKEHELFN LAKEHURST LAKE JANEE LAKELAND LAKEHUNT LAKESHINE LAKESOL LAKCTON LAKEVIEW LAKEWION LAKEWION LAKIN LAKOMA LALIE LAMAR LAMARTINE LAMBETT LAMBET LAMB	C A D B B A A A D B D B B C C A A B A D A C D B B B C D B D A D C B D D B B B D B	LASAUSSES LAS FLORES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAHE LATANIER LATANIER LATANIER LATANIER LATINA LATINA LATIV LAUDERDALE LAUGENOUR LAUMERDALE LAUGENOUR LAUMEL LAUREL WOOD LAVEN LAVALLEE LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVINA LAWINA L	CD 2000000000000000000000000000000000000	LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOM LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESTER LESTER LESTER LETTA LETTERBCX LETHA LETTERBCX LEVANSY LEVASY LEVASY LEVISTER LEWISBERRY LEWISBERRY LEWISBERRY LEWISBURG LEMISBURG LEMISBURG LEMISURG LEMISBURG	8 8 / O 8 B C D B B C D D C B A C C B C D B C C C B B D B A D C A D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLEFIELD LITTLE POLE LITTLE HOUD LITTLE LITTLETON LITTLE HOUD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIVINGSTON LIZANT LOBELYILLE LUBELYILLE LCBERG LUBERT LCBITOS LOCEY LCCKERBY LCCKER	D B A C C C D A D D B B C A D A C 8 C C 8 B C B B D B C D A C D C D C A B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISBURG LOUISBURG LOUP LOURDES LOVEJOY LOVELL LOVELOCK LOWELL LOWELL LOWALT LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LUCE LUCE LUCE LUCE LUCE LUCE LUCE LUCE	C 8 C C C B B B D D B D D C C C C C B B B B
LAIREP LA JARA LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHELEN LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHUNT LAKESHIDRE LAKESOL LAKCTON LAKEYIEM LAKEWOOD LAKIN LAKEWOOD LAKIN LAKAWIN LALANDE LALANDE LALANDE LALANDE LALANDE LALANDE LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMBERT LAMBONI LAMONI LAM	C A D B B A A A D B D B B C A A B A D A C D S B B C D B D A D C 8 D D B B B D B C	LASAUSSES LAS FLORES LASHLEY LASIL LAS LUCAS LAS PDSAS LASSEN LASTANCE LAS VEGAS LATAH LATANIER LATANIER LATINA LATINA LATOM LAUREN LAUREN LAUREL LAUREL LAUREL LAUREN LAVELDO LAUREN LAVELDO LAVFRIN LAVINA LAWLE LAWEN LAWLE LAWENCE LAWENCE LAWENCE LAWENCE LAWRENCE LAYCOCK	CD 2000000000000000000000000000000000000	LENZ LEC LEON LECNARD LECNARD LECNARDO LECNARDO LECNARDO LECNARDO LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESLIE LESTER LES SUEUR LETA LETTHAN LETTHAN LETTHAN LEVIS LEWIS BURG LE	8 8 A C B D B C D C B B C D D C B A C C B C D B C C C B B D B A D C A D D	LISMAS LISMAS LISMARE LITCHFIELD LITHGOM LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLE POLE LITTLE WOOD LITTLE LIVERMORE LOBERT LOBITOS LOCKHAPT LCCKHOCT LOCKHART LCCKPCKT LCCKPCCKT LCCKPCCKT LCCKPCCC LCCCKPCCC LCCCCCCC LCCCCCCCCC LCCCCCCCCCC	O B A C C C D A D D B B C A D A C 3 C C 8 8 C B B C B B D B C D A C D C D C A B C	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISA LOUISBURG LOUPES LOUVIERS LOVEJOY LOWELAND LOVELL LOWELD LOWELL LOWELD LOWELL LOYALTON LOYSVILLE LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LUCEDALE LUCEDALE LUCEDALE LUCEDALE LUCETON LUCKY LUCKY LUCKY LUCKY LUCCY LUDDEN LUCKY LUDDEN LUCHON LUJANE LUJANE LUKIN LUJANE LUKIN	C 8 C C C C B B B D D B D D C C C C C B B B B
LAIREP LA JARA LAKE CHARLES LAKE CHEEK LAKEHELEN LAKEHELEN LAKEHURST LAKE JANEE LAKELAND LAKEHONT LAKEPORT LAKESOL LAKCTON LAKEYIEW LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKEWIN LAKOMA LALANDE LAMI LAHODE LAMI LAMARTINE LAMBERT LAMBERT LAMBERT LAMBERT LAMOURE LAMOURE LAMOURE LAMOURE LAMOURE LAMOURE LAMOURE LAMOURE LAMPSHIRE LAMPSHIRE LAMPSHIRE LAMSON LAMCASTEP LANDE LANDES L	C A D B B A A A D B D B B C C A A B A D A C D B B B C D B D A D C B D D B B B D B	LASAUSSES LAS FLORES LAS FLORES LASHLEY LAS IL LAS LUCAS LAS POSAS LASSEN LASTANCE LAS YEGAS LATAHE LATANIER LATANIER LATANIER LATANIER LATINA LATINA LATIV LAUDERDALE LAUGENOUR LAUMERDALE LAUGENOUR LAUMEL LAUREL WOOD LAVEN LAVALLEE LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVEEN LAVINA LAWINA L	CD 2000000000000000000000000000000000000	LENZ LEC LECON LECNARD LECNARD LECNARDO LECNARDOTOM LECNIDAS LECTA LEPLEY LERDAL LERCY LESHARA LESHC LESTER LESTER LESTER LETTA LETTERBCX LETHA LETTERBCX LEVANSY LEVASY LEVASY LEVISTER LEWISBERRY LEWISBERRY LEWISBERRY LEWISBURG LEMISBURG LEMISBURG LEMISURG LEMISBURG	8 8 / O 8 B C D B B C D D C B A C C B C D B C C C B B D B A D C A D	LISMAS LISMCRE LITCHFIELD LITHGOW LITHIA LITIMBER LITLE LITLEBEAR LITTLEFIELD LITTLEFIELD LITTLE POLE LITTLE HOUD LITTLE LITTLETON LITTLE HOUD LITZ LIVERMORE LIVINGSTON LIVCNA LIZE LIVINGSTON LIZANT LOBELYILLE LUBELYILLE LCBERG LUBERT LCBITOS LOCEY LCCKERBY LCCKER	D B A C C C D A D D B B C A D A C 8 C C 8 B C B B D B C D A C D C D C A B	LOTHAIR LOTUS LOUDON LOUCCNVILLE LOUIS LOUISBURG LOUISBURG LOUP LOURDES LOVEJOY LOVELL LOVELOCK LOWELL LOWELL LOWALT LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LOYALTON LUCE LUCE LUCE LUCE LUCE LUCE LUCE LUCE	C 8 C C C B B B D D B D D C C C C C B B B B

NOTES A BLANK HYDPOLOGIC SOLL GROUP INDICATES THE SOLL GROUP HAS NOT BEEN DETERMINED TWO SOLL GROUPS SUCH AS B/C IMPLICATES THE DEALMED/UNDRAIMED SITUATION

LUN	C	MALABAR	A/D	⊭ARKSBCRC		MAYFLCHER	C	PCVICKERS	C
LUNA	C	MALABON	C	MARLA	Α	MAYHEW	D	MEAD	D
LUNCH	C	MAL ACHY	В	MARLBERE	В	MAYLAND	В	MEACIN	A
LUNDIMO	C	MALAGA	В	MARLEAN	В	MAYMEN	C	MEADCHVILLE	8
LUNDY	В	PALAMA	Α	MARLETTE	В	MAYNARD LAKE	В	MEADVILLE	
LUNI	C	MALAYA	0	MARLEY	В	MAYO	В	MEANDER	0
LUPTON	D	MALCCLM	£	MARLIN	D	MAYGDAN	В	PECAN	В
LURA	D	MALEZA	В	MARLCH	C	MAYCHORTH	Ü	MECCA	В
LURAY	C/D	MALIBU	0	MARLTCN	C	MAYSDORF	В	MECKESVILLE	C
LUTE	D	MALIN	C/0	MARMARTH MARMA	В	MAYSVILLE	С	MECKLENBURG MEDA	C
LUTH	С	MALJAMAR			D	MAYTCHN			В
LUTHER	В	MALLCT	A	MARPA	В	MAYVILLE	В	MEDANO	C
LUTIE	B D	MALM MALG	C B	MARQUETTE MARR	B	MAYHGOD MAZEPPA	B B	MEDARY MEDFCRD	C B
LUVERNE	C	MALONE	В	MARRIOTT	В	PAZCN	Č	MEDERA	0
LUXOR	Č	MALCTERRE	C	MARSDEN	Č	PAZUPA	č	MEDICINE LODGE	в
LUZENA	D	MALPAIS	č	MARSELL	6	MCAFEE	č	MEDINA	6
LYCAN	В	MAL PCSA	č	MARSHALL	В	MCALLEN	В	MEDWAY	В
LYCOMING	č	MALVERN	č	MARSHAN	Ö	MCALLISTER	č	MEEKS	A
LYDICK	В	MAMALA	Ď	MARSHDALE	č	PCALPIN	č	MEETELTSE	C
LYFORD	c	MAMOU	C	MARSHFIELD	C	MCBEE	В	MEGGETT	D
LYLES	В	MANAHAA	č	MARSING	В	MCBETH	Č	MEGCN	Č
LYMAN	C/D	MANALAPAN		MART	C	MCBRIDE	В	MEHL	C
LYNCH	D	MANANA	C	MARTELLA	В	MCCABE	В	MEHLHCRN	C
LYNCHBURG	B/D	MANASSA	C	MARTIN	C	MCCAFFERY	Α	MEIGS	
LYNDEN	Α	MANASSAS	В	MARTINA	Α	MCCAIN	C	MEIKLE	0
LYNNDYL	A	MANASTASH	C	MARTINECK	0	MCCALEB	В	MEISS	D
LYNN HAVEN	8/0	MANATEE	B/D	MARTINEZ	D	MCCALLY	D	MELBCURNE	В
LANNAILLE	С	MANAWA	C	MARTINI	В	MCCAMMON	C	MELBY	C
LYNX	В	MANCELONA	Α	MARTINSBURG	В	MCCARRAN	D	MELITA	8
LYONMAN	Ć	MANCHESTER	A	MARTINSOALE	В	MCCARTHY	В	MELLENTHIN	D
LYONS	Ü	MANDAN	В	MARTINSON	C	MCCLAVE	C	MEL LOR	C
LYUNSVILLE	В	MANDERFIELD	В	MARTINSVILLE	В	MCCLEARY	C	MELLCTT	В
LYSINE	D	MANDEVILLE	В	MARTINTCN MARTY	C	MCCLELLAN	В	MELOLANO MELROSE	C
LYSTAIR LYTELL	B B	MANF RED MANGUM	D D	MARVAN	B D	MCCLCUD MCCOIN	C 0	WELKOZE	C A
LTIELL	ь		A		C		υ	MELTON	В
MABEN	С	MANHATTAN	Č	MARVIN	Č	MCCOLL MCCONNEL	В	MELVILLE	£
MABI	D	MANHEIM	C	MARYDEL	В	MCCOCK	В	MELVILLE	D
MABRAY	D	MANILA	Č	MARYSLAND	Ö	MCCCRNICK	Č	MEMALOCSE	Ö
MACAY	В	MANISTEE	В	MASADA	Č	MCCCY	č	MEMPHIS	В
MAC EDONI A	Č	MANITOU	Č	MASCAMP	Ö	MCCREE	В	MENAHGA	A
MACHETE	Č	MANLEY	В	MASCCTTE	Ö	MCCHCRY	Č	MENAN	ĉ
MACHIAS	В	MANL IUS	č	MASHEL	8	MCCRCSK IE	Ď	MENARD	В
MACK	č	MANLCVE	B	MASHULAVILLE	B/D	MCCULLOUGH	č	MENCH	č
MACKEN	Ď	MANNING	В	MASON	В	MCCULLY	č	MENCEBOURE	Č
MACKINAC	В	MANOR	В	MASCHVILLE	C	MCCUNE	D	MENCCCINO	В
MACKSBURG	В	MANSFIELD		MASSACK	В	MCCUTCHEN	C	MENDON	В
MACOMB	В	MANSIC	В	MASSENA	C	MCDOLE	В	MENDLTA	В
MACOMBER	В	MANSKER	В	MASSILLON	В	MCDONALD	В	MENEFEE	D
MACON	В	MANTACHIE	C	MASTERSON	В	MCDONALDSVILLE	C	MENFRC	8
MACY	В	MANTEO	C/D	MATAMOROS	C	MCEWEN	В	MENLO	D
NIJAGAM	D	MANTER	В	MATANUSKA	C	MCFACDEN	В	MENC	C
MADAWASKA	В	MANTON	В	MATANZAS	В	MCFAIN	C	MENCKEN	C
MADDDCK	A	MANTZ	В	MATAPEAKE	В	MCFAUL	C	MENCMINEE	В
MADDOX		MANU	C	MATAMAN	C	MCGAFFEY	C	MENTG	C
MADELIA	C	MANVEL	C	MATCHER	A	MCGARY	C	MENTCR	В
MADELINE	D	MANHOOD	D	MATFIELD	C	MCGEHEE	c	MEQUEN	C
MADERA MADISDN	D	MANZANITA MANZANO	C C	MATHERS	8 8	MCGILVERY	e B	MERCEDES	C/D D
	B C		C	MATHERICN		PCGINTY		MERCER	Č
MADONNA MADRAS	Č	MAPES	Č	MATHESON MATHEWS	В	MCCIRK MCGCWAN	C B	MERCEY	Č
MADRID	В	MAPLE MT.	В	MATHISTON	С	MCGRATH	В	MEREDITH	£
MADUREZ	В	MAPLETON	C/D	MATLCCK	Ö	MCGREW	A	MERETA	Č
MAGALLON	В	MARATHON	8	MATMCh	Ď	MCHENRY	B	MERGLE	B
MAGENS	В	MARBLE	A	MATTAPEX	č	MCILWAINE	A	MERIDIAN	В
MAGINNIS	C	MAKBLEMOUNT	В	MATTCLE	C	MCINTUSH	В	MER IND	0
MAGNA	D	MARCETTA	Α	MAUDE	В	MCINTYRE	В	MERKEL	В
MAGNOLIA	В	MARCUM	В	MAUGHAN	C	PCKAPIE	D	MERLIN	Ü
MAGNUS	C	MAKCUS	С	MAUKEY	C	MCKAY	D	MERPILL	£/D
MAGUAYI)	D	MARCY	D	MAUMEE	A/D	MCKENNA	C/0	MERNA	С
MAHAFFY	C/D	MARDEM	С	MAUNABC	D	MCKENZIE	D	MERCS	Α
MAHALA	C	MARDIN	C	MAUPIN	C	MCKINLEY	С	MERKIFIELD	6
MAHALASVILLE	B/D		C/D	MAUREPAS	D	MCKINNEY	D	MERRILL	С
MAHANA	В	MAR E SUA	В	MAURINE	D	MCLAIN	C	MERRILLAN	C
MAHASKA	В	MARGERUM	В	MAURY	В	MCLAURIN	В	MERRIMAC	A
MAHER	C	MARGUERITE	B	MAVERICK	C	MCLEAN	C	MERRITT	8/C
MAHONING	0	MARIA MAKIANA	B/C	MAVIF	D	MCLECD	В	MER ROUGE	В
MAHUKDNA MAIDEN	B B	MARIAS	C D	MAMAE MAX	A B	MCMAHON MCMEEN	C	⊭ERTCN MERTZ	В
MAILE	A	MARICAO	В	MAXEY	C	PCPULLIN	C	MESA	В
AGALAM	В	MARICAU MARICOPA		MAXFIELD	C	MCMURDIE	C	MESCAL	C
MAKAALAE	В	MARICUPA	B C	MAXFIELD	A	MCMUKDIE	8	MESCALERO	C
MAKALAPA	D	MARILLA	C	PAXTON	В	MCMURRAY	D	MESITA	Č
PAKAPILI	A	PARINA	A	MAXVILLE	A	MCNARY	C	MESKILL	č
MAKAWAO	В	MARION	Ĉ	MAXWELL	Ď	MCPAUL	В	MESPAN	c
MAKAWELI	В	MARIPOSA	č	MAY	В	MCPHERSON	č	MESSER	Č
MAKENA	В	MARISSA	č	MAYBERRY	č	MCPHIE	В	MET	Ď
MAKIKI	В	MARKES	D	MAYBESC	c	MCQUARRIE	C	METALINE	В
MAKOTI	č	MARKEY	D	PAY DAY	ŏ	MCGUEEN	č	METAMORA	В
MAL	В	MARKHAM	C	MAYER	0	MCRAE	В	METEA	В
MALA	В	MARKLAND	Č	MAYFIELO	В	MCTAGGART	В	METIGOSHE	Α

NOTES A BLANK HYDROLOGIC SOIL GROUP INDICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS PACTIBILIZATES THE DEALMEDALMED SITUATION

ME TOLIUS	в	MISSIDN	В	MCRGANFIELD	8	NABESNA	c	NESS	D
METRE	D	MITCH	В	MURGNEC		NACEVILLE	С	NESSEL	В
METZ	Α	MITCHELL	В	MCRIARTY	D	NACHES	В	NESSDPAH	В
MEXICU	D.	MITIWANGA	C	MCRICAL	C	NACIFIENTO	c	NESTER	C
MHOON	D	MIZPAH	C	MCRLEY	C	NACCGCOCHES	В	NESTUCCA	C
MIAMI	В	MCANC	D	MCRMCN MESA	C A/C	NADEAN	В	NETARTS	A
MAIMAIM	C A/D	MOAPA MCAULA	D A	MCRCCCC MCRCNI	D	NAD INA NAFF	8 8	NETC NETTLETCN	e C
	8	MOBFETTE	В	MURCP	c	NAGEES I	В	NEUBERT	8
MICHELSON MICHIGAMME	č	MCCA	Ü	MCRRILL	В	NAGIISY	č	NEUNS	8
MICK	В	MDCHD	В	MORRIS	č	NAGLE	8	NEUSKE	8
MIDAS	Ď	MDDA	Ď	MCRRISON	В	NAHMA	č	NEVADOR	č
MIDDLE	č	MOCALE	č	MCRRDW	č	NAHUNTA	č	NEVILLE	8
MIDDLEBURY	В	MGDEL	c	MCRSE	ō	NAINA	В	NEVIN	č
MIDESSA	В	MDDE NA	ē	MORTENSON	č	NAKAI	В	NEVINE	B
MIDLAND	D	M DDESTO	С	MCRTCN	В	NAKNEK	D	NEVCYER	D
MIDNIGHT	С	MDDOC	С	MGRVAL	С	NAMRE	8	NEVTAH	С
MIDVALE	С	MDENKOPIE	D	MUSEY	C	NANAMKIN	A	NEVL	D
MIDWAY	D	MDFFAT	В	MCSCA	A	NANCY	8	NEWARK	С
MIFFLIN	в	MOGDLLON	В	MCSEL	С	NANNY	В	NEWART	В
MIFFLINBURG	В	MGGUL	В	MOSHANNON	В	NANNYTON	В	NEWAYGO	8
⊭IGUEL	C	MDHAVE	В	MCSHER	D	NANSENE	В	NEWBERG	8
MIKE	0	MOHAVE	В	MCSHERVILLE	C	NANTUCKET	C	NEWBERRY	C
MIKESELL	С	MDHAWK	В	MOSIDA	В	NANUM	c	NEWBY	В
MILACA	8	MOTELLIMA	C	MOSQUET	0	NAPA	C	NEW CAMBRIA	c
MILAN	8	MOKELUMNE	0	MCSSYRDCK	В	NAPIER	В	NEW CASTLE	В
MILES MILEDRO	B C	MOKENA MDKULEIA	C B	MCTA MCTTSVILLE	B A	NAPLES NAPPANE.	B D	NEWCCMB NEWDALE	A B
MILHAM	c	MOLAND	8	MCULTON	8	NAPTCHNE	В	NEWELL	В
MILHEIM	c	MOLCAL	8	MOUNO	Č	NAKANJITU	Č	NEWELLTON	Ď
MILL	В	MOLENA	A	MCUNTAINBURG	Ď	NAKANJO	č	NEWFANE	Ü
MILLARD	В	MCLINOS	В	MCUNTAINVIEW	8/0	NARCISSE	8	NEWFORK	D
MILLBORO	ŏ	MOLLY	ă	MCUNTAINVILLE	В	NARD	В	NEWKIRK	8
MILLBROOK	В	MOLOKAI	В	MCUNT AIRY	A	NARLCH	Ċ	NEWLANDS	В
MILLBURNE	В	MOL SON	B	MCUNT CARROLL	В	NARCH	В	NEWLIN	e
MILLCREEK	В	MDLYNEUX	В	MCUNT HOME	В	NAKRAGANSETT	В	NEWMARKET	В
MILLER	D	MDNAD	Α	MCUNT HDCD	В	NAKRCHS	D	NEWPORT	С
MILLERLUX	D	MONAHAN	C	MCUNT LUCAS	С	NASER	В	NEWRY	В
MILLERTON	D	MCNAHANS	8	MDUNT CLIVE	0	NASH	В	NEWSKAH	8
MILLETT	В	MCNARDA	0	MCUNTVIEW	В	NASHUA	A	NEWSTEAD	D
MILLGROVE	8/0	MCNCLDVA	в	WDAILLE	C	NASHVILLE	В	NEWTON	A/O
WILL HOLLOW	В	MIMADADA	C	MCWATA	D	NASCN	С	NEWTONIA	В
MILLICH	D	PCNDCVI	В	MCHER	c	NASSAU	C/D	NEWTOWN	C
MILLINGTON	8	MONEE	D	MCYINA	D	NASSET	В	NEWVILLE	C
MILLIS MILLRACF	C B	MONICO MONIDA	В	MUCARA	D C	NATAL 1 E NATCHEZ	C	NEZ PERCE	c
MILLSAP	Č	MCNITEAU	B D	MUCET	D	NATHRDY	8 8	NIAGARA NIART	C
MILLSDALE	8/0	MONMOUTH	C	MUD SPRINGS	Č	NATICNAL	В	NIBLEY	В С
MILLSHOLM	c	MONO	Ď	MUGHCUSE	č	NATRONA	8	NICHOLSON	č
MILLVILLE	В	MONGLITH	č	MUIR	В	NATURITA	В	NICHCLAILLE	č
MILLWOOD	D	MCNGNA	В	MUIRKIRK	В	NAUKATI	Ď	NICKEL	B
MILNER	č	MONDINGAHELA	č	MUKILTEC	ŏ	NAUMBURG	č	NICKLE	В
MILPITAS	C	MONRCE	6	MULCRCW	0	NAVAJO	D	NICCDEMUS	В
MILRDY	D	MONRCEVILLE	C/D	MULKEY	Ċ	NAVAN	Ď	NICOLAUS	č
MILTON	С	MCNSE	В	MULLINS	D	NAVARCD	В	NICCLLET	В
MIMBRES	С	MCNSERATE	С	MULT	С	NAVESINK		NIELSEN	υ
MIMDSA	С	PDNTAGUE	D	MULTCRPGR	A	NAYLOR		NIGHTHAWK	В
MINAM	В	MONTALTO	С	MUMECRD	В	NAZ	В	NIHILL	8
MINATARE	D	MONTARA	D	MUNCELEIN	В	NEAPCLIS	B/D	NIKISHKA	В
MINCHEY	8	MONTAUK	C	MUNISING	В	NEBEKER	C	NIKLASON	8
MINC()	8	MONTCALM	A	MUNK	C	NEBISH NEBO	В	NIKCLAI	0
MINDALE	В	MONTE CRISTO	D D	MUNISON MUNUSCONG	0		С	NILAND	. c
MINDEGL MINDEMAN	8 8	MONTELL	C	MUROG	8	NECHE NEDERLAND	В	NILES NIMROD	c c
MINDEN	c	MONTELLO	č	MURDCCK	č	NEEDHAM	Ď	NINCH	Č
MINE	В	MONTEVALLO	c	MUREN	В	NEECLE PEAK	č	NINEMILE	o
MINEOLA		MENTGOMERY	Ď	MURRILL	8	NEEDMORE	č	NINEVEH	В
MINER	Ð	MONTICELLD	В	MUSCATINE	В	NEELEY	В	NINIGRET	8
MINERAL	A	PCNTIETH	A	MUSE	Č	NEGITA	В	NININGER	В
MINERAL MT.	С	MCNT MORENCI	9	MUSELLA	В	NEGLEY	В	NINNESCAH	В
MINERVA	8	MONTOSA	C	PUSICK	В	NEHALEM	В	NIOBELL	С
MING	В	MONTCUR	D	MUSINIA	В	NEILTON	A	NIDTA	D
MINGO	В	PCNTCYA	C	MUSKINGUM	С	NEISSON	В	NIPE	В
MINIDOKA	C	MONTPELLIER	C	MUSKCGEF	C	NEKIA	C	NIPPERSINK	В
MINNEISKA	С	MONTRUSE	d	MUSZETZHEFF	В	NEUL IS	В	NIPSUM	С
MINNEUSA MINNEQUA	A 8	MONTVALE	0	MUSSEY	0	NEL SCCTT	В	NIRA	В
MINNETUNKA	D	MCNTVERDE		MUSTANG	8 B	NEL SCN NEMAH	8	NISHNA NISHON	C U
MINNEWAUKAN	В	MONTWELL MOCDY	C B	MUTNALA MUTUAL	8	NEMAKA	C B	NISCUALLY	A
MINNIFCE	D	MCUHCO	В	PYAKKA		NENNE	В	NISSWA	8
MINUA	c	MCCSE RIVER	Ċ	PYATT	B/C		D	NIU	8
MINORA	č	MOPA	8	MAERS	0	NEGTOMA	В	NIULII	č
MINTO	8	MCR ADD	č	MYERSVILLE	В	NEPESTA	č	NIVLCC	c '
MINU	Đ	MCHALES	C	MYLHEA	В	NEPHI	В	NIWCT	č
MINVALE	В	MCKD	C	PYR1CK	Đ	NEPPEL	В	NIXA	č
MIRABAL	С	MUR F AU	C	MYRTLE	В	NEPTUNE	Α	NIXCN	В
MIRACLE	В	MOREHEAD	C	MYSTEN	A	NERESCN	8	NIXCNTON	É
MIRAMAR	В	MOREHOUSE	C	MYSTIC	D	NESDA	A	NIZIAN	/A
MIRANDA	D	MCRELAND	D	PYTCH	В	NESHAMINY	В	NOBLE	′ B
MIRES MIRRUR	6 B	MORELANDTUN	4	h 046	0	NES1KA	В	NDBSCDTT	A
- I L L L L	D	MCREY	C	N-BAR	В	NESKCHIN	В	NODAWAY	8
MIRROP LAKE	A	MCFFITT	P	NAALEHU	В	NESPELEM	В	NUEL	D

A BLANK HYDPOLOGIC SOIL GROUP IMPLICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS P/C IMPLICATES THE DEALMED/IMPRAIMED SITUATION

NOHILI	0	CCILLA	c	CNSLCW	В	DWGSSO	В	PARALCHA	C
NDKASIPPI	0	CCKLEY	В	ONTARIC	В	CMYHEE	В	PARAMORE	0
NOKAY	C	DCCEE	A/0	CNTKO	8/0	CXALIS	C	PARASOL	В
NOKOMIS	В	OCONEE	C	ONTCRAGER	0	OXBCH	C	PARCELAS	0
NUL AM NDL I CHUCKY	8 B	CCCNTO	B C	ÜNYX CCKALA	В А	DXERINE CXFGRD	C D	PARDEE PAREHAT	O B
NOLIN	В	OCQUEOC	В	CPAL	Ô	CZAMIS	8/0	PARENT	Č
NULO	В	CCTAGON	В	OPEGUON	C/D	DZAN	0	PARIETTE	Č
NDME	C	CDELL	В	CPFIR	Ç	CZAUKEE	С	PARIS	
NCNDAL TON	В	COERMOTT	c	GPIMIKAC	0		_	PARISHVILLE	С
NONOPAHU NOUKACHAMPS	υ C/D	COESSA	0	CCUAGA ORA	C C	PAAIKI Paalca	В В	PARKAY PARKOALE	В
NOUKACHAMPS	8	ODNE	C C	CRAN	В	PAALLA	A	PARKUALE	В В
NDONAN	ΰ	OFFALLON	ŏ	CRANGE	D	PACHAPPA	e	PARKER	В
NOKA	В	OGOEN	D	CRANCERURG	В	PACHECO	B/C	PARKFIELD	č
NORAD	В	CGEECHEE	C	CRCAS	0	PACK	C	PARKHILL	Ō
NCKBORNE	В	CGFMAW	C	GRCHARD	В	PACKARO	В	PARKHURST	
WOKBA	В	CGILVIE	c	ORD	A	PACKER	C	PARKINSON	В
NORD NDRDEN	B	CGLALA UGLE	8 8	CRONANCE UPOWAY	C U	PACKHAM PACKSADDLE	B	PARKVILLE PARKWDCO	A/C
NORDNESS	В	CHAYSI	č	ORELIA	Ď	PACKWCCL	ŏ	PARLEYS	8
NORFOLK	В	CHIA	A	URELLA	Š	PACULET	В	PARLIN	Č
NORGE	В	UJAI	В	CREM	A	PACTCLUS	C	PARLO	В
NCKKA	В	ATALO	υ	CRESTIMBA	C	PAGEN	C	PARMA	C
NCRMA	В	CKANCGAN	В	CRECRO	c	PADRENI	В	PARNELL	0
NORREST NORRIS	С С	OKE ECHOBEE	0 A/D	CRIDIA CRIF	C A	PADUCAH PADUS	B B	PARR PARRAN	B D
NORTHDALE	č	CKEELANTA	A/O	CRIC	ĉ	PAESL	В	PARRISH	Č
NORTHFIFLE	В	CKEMAH	c	CRICN	В	PAGET	В	PARSHALL	В
NURTHPORT		CKLAREO	В	CHITÁ	В	PAGOCA	С	PARSIPPANY	D
NORTH POWDER	C	CKLAWAHA	A/D	CPLANO	В	PAHKANAGAT	C	PARSONS	0
NORTHUMBERL AND	C/U	CKMCK	Ċ	CRLANOC	A	PAHKEAH	0	PARTRI	C
NORTUN NORTONVILLE	C C	OKO CKUBGJI	C U	CKMAN URMSBY	C 8/C	PAHRGC Paia	C	PASAGZHAK PASCO	8 B
NOS TUNE	υ	OKCLONA	C	CHODELL	c c	PAICE	č	PASC SECO	Ď
NORWALK	В	CKPEEK	ΰ	GREFINE	В	PAINESVILLE	•	PASCUETTI	C/0
NORWAY FLAT	Α	DKTIBBEHA	O	GPC GRANDE	C	PAINTROCK	В	PASCUOTANK	8/0
NDEWFLL	C	DLA	c	CPCNC	0	PAIT	В	PASSAR	C
NOK' TCH	C B	DLAA	A	CKK CKK	c	PAJARITO	В	PASS CANYON	0
NC#WO!'D NOTI	D	OLALLA CLANTA	C B	LPRVILLE	C C	PAJARO Pakala	С В	PAS SCREEK PAS TURA	9 0
NOTUS	A	CLATHE	č	CRSA	Ä	PAKINI	В	PATAHS	8
NOVARA	В	CLU CAMP	Č	CRS INC	A	PALA	В	PATENT	ċ
NUVARY	В	OL (/HAM	C	OKTELLO	A	PALACIC	В	PATILLAS	В
NDWGUD	C	CEDS	C	CRTIGALITA	C	PAL APAL AI	В	PATILO	C
NDY(C	CLUSMAR	870	CRTING	C	PALATINE	В	PATIT CREEK	В
NUCKOLLS	C	CLOWICK CLELO	В В	CRT1Z CRWGGD	C B	PALESTINE PALISADE	B	PATNA PATCUTVILLE	C C
NUCLA	В	CLENA	8	(SACE	Ö	PALMA	8	PATRICIA	В
NUECES	č	CLEQUA	В	CSAKIS	В	PALMAREJO	c	PATRICK	В
NUGGET	C	CLETE	в	USGCCO	В	PALM BEACH	Α	PATROLE	c
NUMA	C	OLEX	е	LSFA	В	PALMER	0	PATTANI	C
NUNDA	C	CLGA	Ċ	GSHAWA	, C	PALMER CANYON	В	PATTENBURG	В
NUNICA NUNN	С С	CLIAGA	(8 15	C * SHEA C SEKC SH	C	PALMICH PALMS	8 C	PATTERSON PATTON	C 8/C
NUSS	ΰ	CLINUA	8	CSHTCHO	В	PAL MYRA	В	PATMAY	Č
NUTLEY	č	CLIPHANT	ਰ	CSICR	8/0	PALU	В	PAUL	В
NUTRAS	C	CLIVCHAIN	c	CSKA	С	PALLMAS	e	PAULOING	0
NUTRICSC	В	CLIVER	R	LSMUND	В	PALEMINO	0	PAULINA	C
NUVAL DF NYAL A	C D	CLIVIER	C D	USCEE	8	PALCS VERDES	e B	PAULSELL PAULVILLE	C B
NY 4CRF	A	CLMITO	3	02C4IDGF	ĭ	PALCUSE PALSGROVE	e	PAUPALU	В
NYSSA	ĉ	CLEOS	ć	CSLTE	в	PAML ICO	ΰ	PALASAUGUNT	บั
NYSSATON	В	CLMSTED	6/0	CSS JAN	č	PAMCA	Ċ	PAUSANT	В
NYSTROM	C	CLNEY	8	CST	В	PAMSCEL	0	PAUWELA	В
	8	CLCKOI	C	CSTRANCER	В	PANA	B C	PAVAHRCC	В
UAKDAL E	9	GLPE DLSCN	C	CTERC	В О	PANACA PANAE NA	0	PAVANT PAVILLICN	О В
('AKDEN	0	CLION	Ĺ	GTIS	č	PANASCFFKEE	ŭ	PAWCATUCK	ง
CAKECRU	н	OLUSTEE	6/0	CTISCO	A	PANCHERI	В	PAWLET	В
CAK GLEN	8	LLYIC	В	DTISVILLE	Α	PANCHUELA	C	PAWNEE	υ
OAK GROVE	C	CLYMPIC	£	LTLEY	В	PANCO	6	PAXTON	C
UAK LAKE UAKLAND	C B	CMAHA CMAK	6 C	CISECC	C	PANDLAH PANDGRA	C U	PAYETTE	8 8
DAKS A INGE	Č	CMEGA	A	CTTER CTTERBEIN	8/O C	PANCURA	0	PAYMASTER PAYNE	Č
DAKAILLE	A	CMENA	B	CTTERPOLT	В	PANE	В	PAYSON	Ö
CAYMOUU	0	CMNI	c	CITCKEF	A	PANGUITCH	В	PEACHAM	C
CARAPUKA	В	CNA	A/U	CIMAY	D	PANHILL	E	PEARL HARBOR	υ
UNSIS	В	CNALASKA	В	OTHELL	C	PANICCUE	В	PEARMAN	_
CHAN	C C	CNAMIA (NAKGA	9 2	CUACHITA	C A	PANKY PANCCHE	C B	PEARSOLL PEAVINE	0 C
DHART	B	UNAWA	12	CLTLET	Č	PANULA	Ü	PEGATONICA	В
CERAY	D	CNAWAY	В.	CVALL	č	PANSEY	Ö	PEGCS	C
OBURN	Ü	CNUANA	Ü	CVERGARE	č	PANTHER	C	PEDEE	č
UCALA	0	CNEIDA	B	CVERLY	c	PANTEN	£	PEGERNALES	С
GCEANET	D	G*NETLL	6	CVERTON	C	PAGLA	A	PEDIGO	B/C
UCHEYEDAN UCEANO	A 3	ONE C'NTA ONITA	H C	CVIC	C	PALLI Papaa	B C	PEDLAR	B C
LCHLOCKONEC	В	CNITE	B	OWECC	В	PAPAI	A	PEDRICK PEEBLES	C
UCHI	õ	CATTA	č	CHEN CHEEK	č	PAPAKATING	Ĉ	PEEL	ũ
CCHOSE	C	CNCVA	C	LHENS	D	PAPCESE	C	PEELER	В
OCHUPE!	B/U	CNKAY	0	ChHi	В	PAKACISE	C	PEEVER	Ċ
	PIOTES	A PLANK HY	21201080	11 augg 110	IDICATES T	HE SOLL CROUP HA	TON 2	BEEN DETERMINED	

MOTES A PLANK HYDROLOGIC SOIL GROUP INDICATES THE SOIL GROUP HAS NOT BEEN DETERMINED TWO SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/UNDRAINED SITUATION

PRINT		0			PCE		PREBLE			0
PILLIN										C
PILLIA										
PIEC D										
PELLINA C									QUONSET	A
PINSTITUM A PILOPIM B POLICADO B PRICE C PARRY A PILOPIM B PRICE C PARRY A PILOPIM B PRICE C PARRY A PILOPIM B PRICE C PARRY C P		-							0.40.50	
PIMBR.R.E 0										
PINAL A PINAL B PCLANC PATEIA C RACE O								-		
PRINCE A PINAL C PCLAM B PRIMINK C BACHERT D						ь				
PROBLEM B						В				
PIND										
PROMPIN										
PINTETNE										
PANTITONE										
PINNT										
PIANNEL C										
PENNISCIUN								Č		
PRINT C										
PÉNOTI-S C		Č	PINECALE	В	POLLASKY		PRCMC	0	RAGNAR	8
PRINTICUSE D	PENO	C	PINEGUEST	В	PCLLY	В	PROMENTORY	В	RAGC	C
PINTIQUES	PENOYER	C	PINELLOS	A/O	PCLC	В	PRONG	C	RAGSOALE	8/0
PENTZ	PENROSE	0	PINETOP	C	PCLSEN	Ļ	PROSPECT	В	RAGTGWN	0
PENNOTO	PENTHOUSE	D	PINEVILLE	8	PCLVACERA	C	PROSPEK	В	RAHP	C
PEUGA	PENTZ	0								C/0
PEON										
PEONE										
PEUTLINE C PINU C PCROY B PROVE BAY O RAKE O PROVENTS B PINUTA C PONCETA O PROVERS B RALSEN BY PEUDLIA C PINUTE B FINUTA A PISSPITCAN B RANDOR C PERCENTS C PINOTE B FINUTA A PISSPITCAN B RANDOR C PINOTE BY PEUDLIA C PINOTE BY										
PÉPOIDN B PINULA C PCNCENA O PRCKÉRS B RALSEN BY PEQUEA C PINOLE B FCNCHA A PTARPICAN A RAMADERO B PCNCHAS C PINOLE C PCNC CREEK B PUCHYAN A RAMADERO B PCNCHAS C PINOLE C PCNC CREEK B PUCHYAN A RAMADERO B PCNCHAS C PINOLE C PCNC CREEK B PUCHYAN A RAMADERO B PCNCHAS C PINOLE C PCNC CREEK C PUNC CREEK C PUNC CREEK C PCNC CREEK C PUNC CREEK CREEK C PUNC CREEK CREEK CREEK C PUNC CREEK										
PEGELAS C										_
PERCIVAL C										
PERCIVAL C								_		
PERELLA C										
PERHAM										
PERICO								-		
PERKINS										
PERKS								-		
PERLA										
PERMA										
PERMINE										
PERRIN		c								
PERHINE										
PERROT	PERKINE				PCPPLETCH					
PERRY	PERROT	0		В	PCGUGNECK	С		0		
PERSYN'ILLE	PERRY	0	PIT	ε	PCKRETT	8/0	PULSIPHER	С	RANC	
PERSING C PITITSTOWN C PORTALES C PUNAL A RANCOLPH D PERT 0 PLACENTIA D PCPTERS B PUNCHU A RANCS C PERT 0 PLACERITOS C PCETERS B PUNCHU A RANGER O PESCI C PLACIO A/O PCETIOL C PURCY O RANKIN C PESSIT C PLACK C PCETIOL C PURCATORY O RANTOUL O PESSIT B PLAINFIELO A PCETTRANO O PURCATORY O RANTHAN B PESUI C PLATISTEO C <	PERRYVILLE	8	PITTMAN	C	PCHT	В	PULTNEY	C	RANDADC	
PERSIS B PITTWOOD B PCFT BYREN B PUNALUU C RANCS C PERU C PLACERITOS C PCFTERY B PUNCHU A RANGER C PESCADEPC C/O PLACK C PCFTERY C PURCY O RANTIN C PESSASTIN B PLAINFIELO A PCPTINC C PURGATCRY O RANTOUL O PESSASTIN B PLAINFIELO A PCPTETRO C PURGATCRY O RANTOUL O PESTETINET C PLATA A PCPTTRO B PURSTET C RAPHO B PETERT D PLATA B PCSANT C PURTAM C RAREEN C PETERT D PLATA B PCSANT C PUTAM C RAREEN C PETERT D PLATA B PCSTANT C<	PERSAYC	0		8	PCFTAGEVILLE	0	PUMPER	C	RANDALL	D
PERT O PLACENTIA C PCPTERS B PÜNCHÜ À RANGER 0 PERU C PLACERITOS C PCETEVILLE C PUROM C RANTER C PESCI C PLACK C PCETINO C PURCATORY O RANTOUL O PESSI C PLAINTIEW C PCETINO O PURCATORY O RANTOUL O PESSI C PLAINTIEW C PCRTROUF B PURSEY B RARPEUJE C PETRINDRO B PLANT C PCRTROUT B PURSEY B RARPEUJE C PETRIE D PLATA B PCSSTV B PURSTO A RAPHON B PETRIE D PLATA B PCSSTV B PURSTO A RASBAN C PETRIE D PLATA C PCSTS D <	PERSHING	C	PITTSTOWN	C	PORTALES	C	PUNA	A	RANCOLPH	D
PERU C PLACERITOS C PCETENDIDE C PUROY C RANKIN C PESCADED CO PLACK C PCETINO C PUROY O RANKIN C PESHASTIN B PLAINTIELO A PCPTRANO O PUROY O RANYHAN B PESU C PLAINTIELO A PCPTRANO O PUROY O RANYHAN B PESU C PLAINTIELO A PUROY O RANYHAN B PETOR C PLAITANO B PCHTSHCUTH O PUROY B PURON B PARTIAN C PURON B PURON B PURON B PURON B								C		
PESCADEPC C/O PLACIO A/O PCETITIC C PUROY O RANTÓNL C PESSTIN B PLAINFIELO A PLOPITANO O PURAGRER O RANTÓNL O PESSIN C PLAINFIELO A PLOPITANO O PURAGRER O RANTÓNL O PESSIN C PLAINFIELO A PLOPETRABORO O PUROSA O RANTHAN B PETRIBORO B PLATA B PCATSHOUTH O PUSTOI A RAPHO B PETRIBORO B PLATA B PCASANT C PURAGRER O RAPHO B PETRIBORO B PLATA B PCASANT C PUSTOI A RAPHO B PETRIBORO B PLATA B PCASANT C PUSTOI A RAPHO B PATATA B PUTAGRER C PARTITA C </td <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				_						
PESET C PLACK C PCPTINO C PURGATORY O RANTOUL O PESMASTIN B PLAINVIEW C PLETERTOR 0 PURVES D RANTOUL 0 PETETERTOR C PLATA C PLATE C PLATON C PLATON C PLATON C PURVES D RAPHO 8 PETERTOR B PLAND B PCRTSMOUTH O PUNTAN C RARICA B PCRTSMOUTH O PUNTAN C RARDIOAN 8 PETERTOR D PLATA B PCSANT C PUTAN C RARDEN C PCRTST D PUNTAL O RARTHAU B PLATA B PCSAT O PUUL CC A RASBANC B PCTTTON C PCRTTAN C PCSAT O PUUL CC A RASBANC B PCTTTON D PUL CC A										
PESMASTIN B PLAINFIELD A PLOTIANO D PUNKER O RANYHAM B PESU C PLAINVIEW C PLETRET B PLOTERRICO C PLOTERRICO C PLOTERRICO B PLATA C PUNKAR C RARICA C PREDIONIO C PLATA C PLATA C PUNKAR C RARICA C PETRICO C PLATE C PUNCAR C RARICA B C PUNCAR C C RARICA B PLATER C PUNCAR C C RARICA B PLATAR C PUNCAR C RARICA B PLATA C PUNCAR B PLATA C PUNCAR B PLATA B PLATA B										
PESU										
PETERNET O										
PETERS										
PETOSKEY PETOSKEY PLATEA C PCSEY PETOSKEY PLATEA C PCSEY PETOSKEY PLATEA C PCSEY PETOSKEY PETABLE D PLATEAU B PCSITAS D PUUCAE C RARITAN C PETHOLIA D FLATAN C PCSES C PUU CO A RASSANC B PETOUNS C PLATC C PCSCS C PUU CPAE B RASSET B PMARC B/O PLATTE C PCSST D PUU PA B RATHBUN C PETOUN B PLATTVILLE B PCTAPC D PUU PA B RATHBUN C PHARC B PLAZA B/C PCTRATZ C PYLON C RATTLER B PHAGE B PLAZA B/C PCTRATZ C PYLON C RATTLER B PHAGE B PLAZA B/C PCTRATZ C PYLON C RATTLER B PHAGE B PLASANT GROVE B POTSCAP C PYCTE A RAUB B PHEBA C PLEASANT VALF B PCTTR C PYRAPIO C RAUVILLE C PHARC D PHARC D PHEEN PHEEN B PLEASANT VALF B PCTTR C PYRAPIO C RAUVILLE C PHARC D PHEEN B PLECK C PULTRY B QUAKER C RAVENDA C PALESANT VALF B PLECK C PULTRY B QUAKER C RAVENDA C PHILLIPS C PLEVA B PLECK C PULTRY B QUAKER C RAVENDA C PHILLIPS C PLEVA B PLECK C PULTRY B QUAKER C RAVENDA C PHILLIPS C PLEVA B PLECK C PULTRY B QUANDAH B RAMHIDE D PHILLIPS C PLEVA B PLECK C PULTRY B QUANDAH B RAMHIDE D PHILLIPS C PLUMAS P PLECK C PUCKER B QUANDAH B RAWHOL B RAVENDA C RAYENDOL C RAYENDOL B RAVENDA C RAYENDOL C RAYENDOL B RAMHIDE D PHILLIPS C PLUMAS P PULBLE C PULWAS P PULBLE C PULWAS P PULBLE C PULWAS P PUBBLE C RAYENDOL B RAYEN B PULCE C RAYENDOL B RAYEN B RAYEN B RAYEN B RAYEN B PULCE C RAYENDOL B RAYEN B RAYEN B PULCE C RAYENDOL B RAYEN B RAYE										
PETRIE D PLATEA C PCSEY B PUUKALA D RARICK B PETRIE D PLATEAU B PCSITAS O PUUCRE C RARITAN C PIUTURS C PLATO C PCSKIN C PUU CC A RASBANC B PLATON C PLATON C PCSCS C PUU CC A RASBANC B PLATON C PCSCS C PUU CPAE B KASSET B REMANC B PCMANC C PCSCS C PUU CPAE B KASSET B REMANC B PCMANC C PCTAPC D PUU PA B RATIBBUN C PCMANC C PCMA										
PETRIE O PLATEAU B PCSITAS O PUUCNE C RARITAN C PETRIUS O PLATEAU C PCSKIN C PUUCNE C A RASBANC B PLATUNS C PLATO C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCST O PUU PA B KATHBUN C PETRIUS C PLATO C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCST O PUU PA B KATHBUN C PETRIUS C PCST O PUU PA B RATHBUN C PETRIUS C PCST O PUU PA B RATHBUN C PETRIUS C PCST O PUU PA B RATHBUN C PETRIUS C PCST O PUU PA B RATHBUN C PETRIUS C POUNT C PUU PA B RATHBUN C PETRIUS C PUU PA B RATHBUN C PUU PA B PUU PA C RAYBOU C PANDOUL B PHOLNIUS C PUU PA B PUU PA B PUU PA B PUU PA B PUU PA C RAYBOU C PANDOUL B PHOLNIUS C PUU PA B PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA B PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA B PUU PA B PUU PA C PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA C RAYBOU C RAYBOU C PUU PA B PUU PA B PUU PA C RAYBOU C RAYBOU C RAYBOU C PUU PA B PUU PA C RAYBOU C RAYBOU C RAYBOU C PUU PA B PUU PA C RAYBOU C RAYBOU C RAYBOU C PUU PA B PUU PA C RAYBOU C C		U								
PETTUNS C PLATER C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCSCS C PUU CPAE B KASSET B PEMAMO B/D PLATTE C PCSCS C PUU PA B KATHBUN C PETTON B PLATTVILLE B PCTAMC C PUVALLUP B RATTLEF B RATTLEF B PAGE B PLAZA B/C PCTLATCH C PYLE A RAUB B RATTLER B PHAGE B PLEASANT C PCTRATZ C PYLON C RATTLER B PHAGE B PLEASANT GROVE B POTSCAM C PYCTE A RAUB B PLEASANT VALF B PCTTER C PYKMOID C RAUVILLE C PHERN B PLEASANT VIEW B PCTTER C PYKMOID C RAUVILLE C PHLPS B PLEASANT VIEW B PCTTER C PYKMOID C RAVENDALE C PUUTNEY B QUAKER C RAVENDALE C PHILIPS C PLEVNA C PCWCERTY A QUAMBA C PAUSE B RAMAH B PHILIPS C PLEVNA C PCWCERHURN C QUANDAHL B RAMHIDE C PHILIPS D PHILIPS C PLUMAS P PLOWER B PANESSCRO B RAYNE C RAYNODOVILLE C RAYNODOVILLE C RAYNODOVILLE C RAYNODOVILLE D READING C RAYNODOVILLE B PLICKENT C RAYNODOVILLE B RAZOR C RAYNODOVILLE B PLICKENT B PCOCATELLO B PATTER C PYLEY C QUILLESELL C RAYNODO C RAYNODO D PLICKERL B PLICKERL C PULICESELL C RAYNODO D PLICKERL B PLICKERL C PULICESELL C RAYNODO D PLICKERL B PLICKERL B PLOCOPOKE D PATTER C PYLON C RAZOLIO B RAZOR C RAYNODO D PREACHER B CUINCY A READLYN B REACOLYN B RAZOR C RAYNODO D REACHER B CUINCY A READLYN B REACOLYN B RAZOR C RAYNODO		Ð								
PETATO B/O PLATC C PCSCS C PUU CPAE B MASSET B PEMAMO B/O PLATTE C PCST O PUU PA B KATHBUN C PTYTON B PLATTYILLE B PCTAPC O PUVALUP B RATTLIFF B PAGE B PLAZA B/C PCTLATCH C PYLE A RATCO C PMAGE B PLASANT C PCTLATCH C PYLE A RATCO C PMAGE) B PLEASANT C PCTLATCH C PYLE A RATCO C PAMAGE B PLEASANT C PCTLATCH C PYLE A RATCO C RATTLER B PMAGE C PLEASANT C PCTLATCH C PYLE A RAUB B PMAGE C PLEASANT C PCTLATCH C PYLE A RAUB B PMAGE C PLEASANT C PLEASANT C PAMAGE C PYCTE A RAUB B PMAGE C PLEASANT VALE B PCTTR C PYLE A RAUB B PMAGE C PLEASANT VALE B PCTTR C PYLE A RAUB B PMAGE C PLEASANT VALE B PCTTR C PYLE C PAMAMID C RAUVILLE D PMEEN B PLEASANT VALE B PCTTR C PYLE C PAMAMID C RAUVILLE D PMEEN C PLEASANT VALE B PCTTR B C PYLE C PCLORE B CUAKER C RAVENDALE C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES B PLEASANT VIEW B PCTTR B CUAKER C RAVENDAL C PMILES C PLEVNA D PCWEEK B QUAKENT B RAWALLI C PMILES C PLEVNA D PCWEEK B QUAKENT B RAWALLI B PMILLIPS DURG A PLOWE C PCWEEKHORN C QUANDANL B RAWALL B PMILLIPS DURG A PLOWE B PLOWER B PLUSH B PCWEEK B QUANDAL B RAWALL B PMILLIPS DURG A PLOWE B PLUSH B PCWEEK B PUCKET B PCWEEK B PUCKET B PUCKET B PCWEEK B PUCKET B										
PENAMO B/O PLATTE C PCST O PUÙ PA B RATHBUN C PLYTON B PLATA B/C PCTAPC O PUYALLUP B RATLIFF B PAGE B PLAZA B/C PCTLATCH C PYLE A RATCN C PHARCE B PLAZA B/C PCTLATCH C PYLE A RATCN C PHARCE B PLAZA B/C PCTLATCH C PYLE A RATCH C PHARCE B PLAZA B/C PCTLATCH C PYLE A RATCH C PHARCE B PLAZA B/C PCTLATCH C PYLE A RATCH B PCHARCE C PYCTE A RAUB B PLAZANTUN B PCTTER C PYLE A RAUB B PHEBA C PLEASANT VALF B PCTTER C PYRAMIO C RAUVILLE D PHEBA C PLEASANT VALF B PCTTER C PYRAMIO C RAUVILLE D PHEBA B PLEASANT VALF B PCTTER C PYRAMIO C RAUVILLE D PHILPS B PLEASANT VIEW B PCTTS B RAULI C PHILPS B PLEOGRA C PCULTREY B QUAKERTON B PLECEK C PCULTREY B QUAKERTON B PLECEK C PCULTREY B QUAKERTON B RAVENNA C PCHCER B QUANDAL B RAWENDA B PHILLIPS C PLEVNA C PCHCER B QUANDAL B RAWHOB B RAWHOB B PLICHES C PLEVNA C PCHCER B QUANDAL B RAWHOB D PHILLIPS D PLOYER B										
PHYTON B PLATALLE B PLATAC O PUVALLUP B RATLIFF B PHAGE B PLAZA B C PCTATCH C PYLE A RATCH C PHAGE B PLEASANT C PCTRATZ C PYLEN C RATTLER B PHARCLID D PLEASANT GRÖVE B POTSCAM C PYCTE A RAUB B PHEBA C PLEASANT VALF B PCTTER C PYRMID C RAUVILLE D PHERN B PLEASANT VALF B PCTTER C PYRMID C RAUVILLE D PHERN B PLEASANT VALF B PCTTE B CUAKER C RAVENDALE O PHILAS B PLECE C PCUCTRE B CUAKER C RAVENDALE O PHILASON B PLECE C PCUCTRE B CUAKER C RAVENDALE O PHILASON B PLECE C PCUCTRE B CUAKER C RAVENDALE O PHILLIPS B PLECE C PCWCERTY A QUAMBA O RAVCLA B PHILLIPS B PLOVER B QUANAH B RAMH B RAWAH B PHILLIPS B PLOVER B PLOVER B QUANAH B RAWAH B PHILLIPS B PLOVER B PLOVER B QUANAH B RAWAH B PHILLIPS C PLUMAS C PCWCERHURN C QUANDAL B RAWADO C RAYOD B PHILOWATH C PULMAS C PLUMAS C RAYODO C PHOC3E C C QUATABA C RAYODO C RAYODOVILLE C QUATABA C RAYODOVILLE C QUATABA C RAYODOVILLE C RAYODOVILLE C RAYODOVILLE C RAYODOVILLE C RAYODO C RAYONO D PICKENT C C QUICLESE C RAYNOR D PLICKENT C C QUICLESE C RAYNOR D PICKENT C C QUICLESE C RAYONOR D PICKENT C C QUILLESE C RAYODOR C										
PHARCLIO D PLEASANT GRÖVE B POTSCAM C PYCTE A RAUB B PHARCLIO D PLEASANT GRÖVE B POTSCAM C PYCTE A RAUB B PHARCLIO D PLEASANT GRÖVE B POTSCAM C PYCTE A RAUB B PHARCLIO C PLEASANTUN B POTSCAM C PYKAMIO C RAUVILLE D PHEERI Y B PLEASANT VALF B PCTTER C PYKAMIO C RAUVILLE C PHERI Y B PLEASANT VALF B PCTTER C PYKAMIO C RAUVILLE C PHERI Y B PLEASANT VIEW B RAVENDA C PHILPS D RAVENDALE O PHILPS D RAVENDALE D PHILLIPS D RAVENDA C PCHOCER B C POWERTY A QUAMBA O RAVELA B PHILLIPS C PLEVNA C PCHOCER B QUANDAL B RAMAH B RAMAH B RAMAH B RAMAH B RAMAH B PLOVER B POWELY C RAYADO C PHOCH TO PHOCH TO THE PROPORTION C QUATAPA C RAYADO C PHOCH TO THE PHOCH TO THE PROPORTION C RAYADO C PHOCH TO THE PHOCH TO THE PROPORTION C PLOVER B PLOVER B POWELY C RAYADO C PHOCH TO THE PROPORTION C PLOVER B PLOVE B PLOVE B POWELY C RAYADO C PHOCH TO THE PROPORTION C PLOVE B PLOVE B POWEL C PCYCAN C QUEBRADA C RAYADOO C PHOCH TO THE PROPORTION C PLOVE B POOL TO PLOVE B PLOVE B POOL TO PLOVE B PLOVE B POOL TO THE PROPORTION C PLOVE B PLOVE B POOL TO THE PARCEL C POWEL B PLOVE B POOL TO THE PARCEL C RAYNOR D PLOVE B PLOVE B POOL TO THE PARCEL C RAYNOR D PLOVE B PLOVE B POOL TO THE PARCEL C RAYNOR D PLOVE B PLOVE B POOL TO THE PARCEL C RAYNOR D PLOVE B PLOVE B POOL TO THE PARCEL C RAYNOR D PLOVE B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE PARCEL C PARCEL B PLOVE B POOL TO THE POOL TO THE PARCEL C PARCEL B POOL TO THE PARCEL C PARCEL B POOL TO THE PARCEL C PARCEL B POOL TO THE PARCEL B POOL TO THE PARCEL	PF Y TON	8	PLATIVILLE	B	PCTAPC	0	PUYALLUP	В	RATLIFF	
PHARCITO D PLEASANT GROVE B POTSCAP C PYCTE A RAUB PHEBA C PLCASANTUN B PCTTER C PYNAMID C RAUZI B PHEBA C PLCASANTUN B PCTTER C PYNAMID C RAUZI B PHEBA C PLCASANTUNE B PCTTER C PYNAMID C RAUZI B PHELAN B PLEASANT VALE B PCTTS B RAVALLI C PHEPEN B PLEFORER C PCUCRE B CUAKER C RAVENDALE O PHIFCESON B PLEFORER C PCUCRE B CUAKER C RAVENDALE O PHITCESON B PLEEK C PCUCTNEY B QUAKERTUN B RAVOLA B PHILLIPS C PLEVNA D PCWEEK B QUAKAH B RAMAH B PHILLIPS C PLEVNA D PCWEEK B QUANDANL B RAMHDE O PHILLIPS BUNG A PLOME C PCWEEKHORN C QUANDANL B RAMHDE O PHILD B PLOWER B PLOWER B QUANDANL B RAMHDE O PHILD B PLOWER B PLOWER B QUANDANL C RAVENDO B PHILD B PLOWER B PLOWER B QUANDANL B RAMHDE O PHILD B PLOWER B PLOWER B C PCWEEKHORN C QUANDANL B RAWDO B PHILD B PLOWER B PLOWER B C RAYDO C RAYDO C RAYDO C RAVENDUF B PHILD B PLOWER B PLUSH B PCWEEY O QUAY C RAYDO C C PHOD B B PLUSH B PCWEEY O QUAY C RAYDON C B PHILD B PLOWER B PLUSH B PCWEEY O QUAY C RAYDON C B PHILD B PLOWER B PLUSH B PCWEEY O QUEETS B RAYNE B PILASA D PLUTOS C PCWEE B RAYDOR D PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLUTOS C PCC CO QUEETS B RAYNE B PILASA D PLOTOS C PCC CO QUEETS B RAYNE B PILASA D PLOTOS C PCC CO QUEETS B RAYNE B PILASA D PLOTOS C PCC CO QUEETS B RAYNOR D PICKENT B PCCATELLO B PATT A QUIMBY C READING C PLOKER C PACONTON B	PHACE	8	PLAZA	B/C	PCTLATCH	C	PYLF	A	RATCH	C
PHEBA C PLCASANTUN B PCTTER C PYRAPIO C RAUVILLE D PHEBA B PLEASANT VALE B PCTTER C PYRAPIO C RAUZI B PHELAN B PLEASANT VIEW B PCTTS B RAVALLI C PHLEPS B PLEAGER C PCLUCRE B CUAKER C RAVENDALE O PHILPS B PLEAGER C PCLUCRE B CUAKER C RAVENDALE O PHILPS C PLEVNA C PCCHERY A QUAMBA O RAVOLA B PHILLIPS C PLEVNA C PCCHER B QUANDAH B RAMH B PHILLIPS G PLEVNA C PCCHER B QUANDAH B RAMH B PHILLIPS G PLEVNA C PCCHER B QUANDAH B RAMH B PHILLIPS G PLUWAS C PCCHER B QUANDAH B RAMH B PHILLIPS G PLUWAS R PCCHER B QUANDAH B RAMH B PHILLIPS G PLUWAS R PCCHER B QUANDAH B RAMHODE O PHILD B PLOVER B PCCHER B QUANDAH B RAMHODE O PHILD C QUANDAH C RAYONO PHOLOTIC C PLUMAS R PCCHER B QUANTISUNG C RAY B PHILOMATH C PLUMAS R PCCHEY C QUATAPA C RAYADO C PHODOTE B PLUSH B PCCHEY O QUAY C RAYADO C PHODOTE B PLUSH B PCCHEY O QUAY C RAYADOUF B PHOLOTIC C PLYMCUTH B PCCHATA C QUEBRADA C RAYPONOVILLE O PLASA D PLUTOS L PCCY O QUETS B RAYNE B PLICACHC C PLYMCUTH A PCCYGAN O QUEMAGC C RAYNOR D PLICACHC C PLYMCUTH A PCCYGAN O QUEMAGC C RAYNOR D PLICACHC C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PLICACHC C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PLICACHC B PUCOMOKE C PRATTER B CUILCENE C RAZCOR C PLICKETT B PGCATELLO B PRATTER C QUILLERUE C RAZONO C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZCOR C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZCOR C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZCOR C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZCOR C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKETT B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKET B POCCATELLO B PRATTER B CUILCENE C RAZONO C PLICKET B POCCATER B POCCAT	PHAR-)	В	PLEASANT	Ĺ	PETRATZ	C	PYLCN	C	RATTLER	В
PHERINY B PLEASANT VALE B PCTTER C PYMPGNT O RAUZI B PHENAN B PLEASANT VIEW B PCTTS B CUAKER C RAVENDALE O PHILES B PLEFOREN C PCUCRE B CUAKER C RAVENDALE O PHILES B PLEFOREN C PCUCRE B CUAKER C RAVENDALE O PHILES DN H PLEEK C PCULTNEY B QUAKERTONN B RAVENNA C PHILLIPS C PLEVNA C PCWCER B QUANAH B RAWAH B PHILLIPS C PLEVNA C PCWCER B QUANAH B RAWAH B PHILLIPS DNURG A PLOWE C PCWCER B QUANAH B RAWAH B PHILLIPS DNURG A PLOWE B PCWCER B PCWCER B QUANAH B RAWAH B PHILLIPS DNURG A PLOWE B PCWCER B PCWCER B CWANTES C RAWAH B PHILLIPS C PLUMAS P PCWCER B CWANTES C RAWADO C PWO-BT C PLUMAS P PCWCER B CWATTSUNG C RAY B PHILOWATH C PLUMAS P PCWCER B CWATTSUNG C RAY B PHILOWATH C PLUMAS P PCWCER B CWATTSUNG C RAYADO C PWO-BT B PLUSH B PCWCEY C QUATAMA C RAYADO C PWO-BT B PLUSH B PCWCEY C QUETAMA C RAYADO C PHO-BT B PLUSH B PCWCEN C QUETAMA C RAYADONVILLE D PLICATION C PLOTT B POWE B PLOWE B P				8						8
PHELAN B PLEASANT VIEW B PCTTS B RAVALLI C PHULPS B PLENGER C PCUCRE B CUAKER C RAVENDALE O PHILOPS B PLECK C PCULTNEY B QUARETTONN B RAVENNA C PHILOPS B PLECK C PCULTNEY B QUARBA O RAVENNA C PHILOPS C PLEVNA C PCWEER B QUANAH B RAWAH B PHILLIPS C PLEVNA C PCWEER B QUANAH B RAWAH B PHILLIPS C PCWEER C PCWEER B QUANDAH B RAWAH B PHILLIPS BURG A PLOME C PCWEER B PLWELL C QUANDAHL B RAWHIDE O PHILO B POOKER B PLWELL C QUARLES C RAWSON B PHILOWATH C PLUMAS D PCWEER B QUANTZSUNG C RAY BPHIPPS C PLUMER B/D PCWEER B QUANTZSUNG C RAYADO C PHOPS C PLUMER B/D PCWEEY O QUAY C RAYENOUF B PHILOPS B PLUSH B PCWEEY O QUAY C RAYENOUF B PHILOPS D PLUTOS C QUEETS B RAYE PICACHC C PLYMCUTH A PCYGAN O QUEETS B RAYNE PICACHC C PLYMCUTH A PCYGAN O QUEBAGO C RAYNESFORO B PICACHC C PLYMCUTH A PCYGAN O QUEBAGO C RAYNESFORO B PICACHC C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLO B PRATHER B CUILCER C RAZCRT B PICKETT B PCCATELLO B PRATHER B CUILCER C RAZCRT B PICKETT B POCATELLO B PRATHER B CUILCER C RAZCRT B PICKETC B PUCOMOKE C PPATT A QUIMBY C READING C PICKETC B PUCOMOKE C PPATT A QUIMBY C READING C PICKETC B PUCOMOKE C PPATT A QUIMBY C READING C				В		C		C	RAUVILLE	D
PHILPS B PLENCER C POLURE B CUAKER C RAVENDALE O PHILPSON H PLECK C POULTNEY B QUAKERTON B RAVENNA C PHILSON B PLECK C POULTNEY B QUAKERTON B RAVENNA C PHILLIPS C PLEVNA C POWERTY A QUANDAL B RAMAH B PHILLIPSON B PLOWER B POWER C QUANDAL B RAMAH B PHILLIPSON B PLOWER B POWER B RAWAH B RAWHIDE O PHILJ B PLOWER B POWER B POWER B POWER B RAWAH C RAY B PHILOMATH C PLUMAS P POWER B C QUANTISUNG C RAY B PHILOMATH C PLUMAS P POWER B C QUATAMA C RAYADO C PHODE B PUSH B POWER B DOWN C QUAY C RAYADO C PHODE B POWER B POWER B CONTACT C QUEBRADA C RAYADO C PHOWNIX O PLUTH B POWER C C QUEBRADA C RAYMONVILLE O PHOWNIX O PLUTOS C POWER C C QUEBRADA C RAYMONVILLE O PLASA D PLUTOS C POWER B POWER B POWER B POWER C C POWER C C RAYNOR D PICACHC C PLYMOUTH A POWGAN O QUEMAG C RAYNOR D PICACHC C PORCH B PLOYAN O QUEMAG C RAYNOR D PICKANAY C PORACH B PLOYAN O QUEMAG C RAYNOR D PICKANAY C POCACH B PLOYAN C QUENTER C RAYNOR D PICKENS D POCALLA A PRAG C QUICKSELL C RAYNOR D PICKETT B POCATELLO B PRATHER B CUILCEME C RAZOR C PICKETT B POCATELLO B PRATHER B CUILCEME C RAZOR C PICKETC B POWER C POWER C C POWER B CUINCY A READING C PICKETC B POWGE C PARTHER B CUILCEME C RAZONOR C						C	PYHMONT	Ð	RAUZI	В
PHIFCHSON H PLEEK C PCULTNEY B QUAKERTCHN 8 RAVENNA C PHILLSC! B/D PLEINE C PCVERTY A QUAMBA O RAVOLA B PHILLIPS C PLEVNA C PCWEEK B QUANAM B RAMAH B PHILLIPS BURG A PLOME C PCWEEKHURN C QUANDAML B RAMHIDE O PHILLIPS BURG C PCWEEKHURN C QUANDAML B RAMHIDE O PHILLIPS C PLUMAS D PCWEEK B QUANTZBURG C RAY B PHILOWATH C PLUMAS D PCWEEK B QUANTZBURG C RAY B PHILOWATH C PLUMAS D PCWEEK B QUANTZBURG C RAY B PHILOWATH C PLUMAS D PCWEEK B QUANTZBURG C RAY B PHILOWATH C PLUMAS D PCWEEK B QUANTZBURG C RAY B PHILOWATH C RAVADO C RAYENOUF B PHILOWATH C QUEEK B QUAY C RAYENOUF B PHILOWATH D PCWEEK B PLUSH B PCWEEK C QUEEK C RAYENOUF B PHILOWATH C QUEEKS B PLUSH B PCWEEK B PLUSH B PCWEEK C QUEEKS B RAYNE B PLICACHC C PLY Q QUEEKS B RAYNE B PLICACHC C PLY Q QUEEKS B RAYNE B PICACHC C PCZC C/O QUEEKS B RAYNE B PICACHC B PCCC C/O QUEEKS C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PLICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PLICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PLICKENS D POCALLA A PRAG C QUILCESEL C RAYNOR D PICKETI B POCATELLO B PRATHER B CUILCEME C RAZONG C PICKETC B PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC B PUCCHORCE C PATT A QUIMBY C READING C PICKETC A READING C PATT A QUIMBY C READING C PICKETC A READING C PATT A QUIMBY C READING C PICKETC A READING C PATT A QUIMBY C READING C										
PHILISEN PHILLIPS C PLEVNA C PCHCER B QUANAH B RAMHIDE O PHILLIPS C PLEVNA C PCHCER B QUANAH B RAMHIDE O PHILLIPSBURG A PLOYER B PLOYER B PLWFLL C QUANDAHL B RAMHIDE O PHILI B PHILLIPSBURG C RAY PHILUMATH C PLUMAS C PCHCER B QUANTZBURG C RAY PHILOMATH C PLUMAS C PCHCER B QUANTZBURG C RAY PHILOMATH C PLUMAS C PCHCER C QUANTAMA C RAYADO C PHOPIS C PLUMMER B/D PCHNITE C QUATAMA C RAYADO C PHOPIS B PLUSH B PCHLEY O QUAY C RAYENOUF B PHOPIS O PLOYER B PCHLEY O QUEBRADA C RAYMONOVILLE O PIASA D PLUTOS C PCY O QUEETS B RAYNE PILACHC C PLYMCUTH A PCYCAN O QUEMADL C RAYNESFORO B PICACHC C PLYMCUTH A PCYCAN O QUEMADL C RAYNESFORO B PICACHC C PCACH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKANAY C PCACH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA B PRATTER B CUILCEME C RAZCRT B PICKETT B POCATELLO B PRATTER C QUILLETUE B READING C PICKETC B PUCOMOKE C PPATT A QUIMBY C READINGTO C PICKETC B PUCOMOKE C PPATT A QUIMBY C READINGTO C										
PHILLIPS C PLEVNA D PCMCER B QUANAH B RAWAH B PAWAH B PHILLIPSHURG A PLOME C PCMCERHURN C QUANDAHL B RAWAH B PAWAH B PLOWER B PLWELL C CUARLES D RAMSON B PHILOWATH D PLOWER B PCWER B QUANTZSUNG C RAY B PHILOWATH D PLOWER B POWAH C GRAYADO C PHOESE B PLUSH B PCWLEY D QUAY C RAYENOUF B PHOESE B PLUSH B PCWLEY D QUAY C RAYENOUF B PHOESE B PLUSH B PCWLEY D QUAY C RAYENOUF B PHOESE B PLUSH B PCWLEY D QUEETS B RAYNE B PLIASA D PLUTOS C PCW D QUEETS B RAYNE B PLIASA D PLUTOS C PCWA D QUEETS B RAYNE B PLICACHC C PLYMCUTH A PCYGAN D QUEMAGL C RAYENORD B PLICACHC C PLYMCUTH A PCYGAN D QUEMAGL C RAYNESFCRO B PLICACHC B POLICE B POLICE B PLICACHC C PCZC C/O QUENZER D RAYNHAM C PLICACHC B PLICACHC B QUITCKSELL C RAYNOR D PLICKETT B POCATELL B PCATELL B PRAGE C QUITCKSELL C RAYNOR D PLICKETT B POCATELL B PRAGE C QUITCKSELL C RAYNOR D PLICKETT B POCATELL B PARTHER B CUITCKSEL C RAZCRT B PLICKFORD D POCKEP D PRATIEY C QUILLERY B READING C PLICKFORD D POCKEP D PRATIEY C QUILLERY B READING C PLICKFORD D POCKEP D PRATIEY C QUILLERY B READING C PLICKFORD D PREACHER B CUINCY A READING C										
PHILLIPSBURG A PLOME C PONCERHORN C QUANDARL B RAWHIDE O PHILU B PLOVER B PLOVER B PLOVER C C QUARLES C RAMSON B PHILOMATH C PLUMAS P PONCER B QUANTZSURG C RAY B PHILOMATH C PLUMAS P PONCER C QUANTZSURG C RAYADO C PHOLOGIE B PLUSH B PONCEY O QUAY C RAYADO C PHOLOGIE B PLUSH B PONCEY O QUAY C RAYENDUF B PHOLOGIE C PLOTH B PONCE C QUEBRADA C RAYENDUF B PILASA D PLUTOS C PCY O QUEETS B RAYNE PILASA D PLUTOS C PCYGAN O QUEETS B RAYNE B PILACHC C PLYMOUTH A PCYGAN O QUEETS B RAYNE B PILACHC C PLYMOUTH A PCYGAN O QUEETS C RAYNESFORO B PILACHC C PLYMOUTH A PCYGAN O QUEETS C RAYNESFORO B PILACHC C PCZC C/O CUENZER O RAYNHAM C PICKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKETT B POCATELLO B PRATHER B CUILCENE C RAZCR C PILKETT B POCATELLO B PRATHER B CUILCENE C RAZCR C PICKFORD O POCKEP D PRATLEY C QUILLAVUTE B READING C PICKHICK B PUCOMOKE C PPATT A QUIMBY C READINGTO C PICKHICK B PUCOMOKE C PPATT A QUIMBY C READINGTO C										
PHILUMATH C PLUMAS R PCWELL C QUARLES C RAMSON B PHILOMATH C PLUMAS R PCWER B QUARTIZUNG C RAY B PHILOMATH C PLUMAS R PCWER B ZO PCWELY C QUATAPA C RAYADO C PHODETE B PLUSH B PCMLEY C QUATAPA C RAYADO C PHODETE B PLUSH B PCWELY C QUEBRADA C RAYADOUF B PHOPAIX O PLUTOS C PCWATA C QUEBRADA C RAYMONOVILLE C PLASA D PLUTOS C PCY C QUEETS B RAYNE B PLACHC C PLYMCUTH A PCYCAN O QUEMAGC C RAYMOSFCRO B PLCACHC C POZC C C CO QUENZER C RAYNESFCRO B PLCACHC B PCACH B PCZC C C/O QUENZER C RAYNOR C PLCKASY C PCACHC B PCACH B PLZC BLANCO B QUICKSELL C RAYNOR D PLCKASY C PCACHC B PLACHC B PCACHC B PCACHC B PLCACHC C PATTER B PCCATELLO B PRATHER B CUILCENE C RAZCRT B PLCKHORD O PCCACHC C PATTER B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PPATT A QUIMBY C READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PLCACHC B PUCCMOKE C PATTER B CUINCY A READING C PATTER B PUCCMOKE C PATTER B CUINCY A READING C PATTER B PUCCMOKE C PATTER B CUINCY A READING C PATTER B PUCCMOKE C PATTER B CUINCY A READING C PATTER B PUCCMOKE C										
PHILOMATH C PLUMAS P PCHER B QUANTZSUNG C RAY B PHILOMATH C PLUMAER B/O PCHNITE C QUATAMA C RAYADO C PHORSE B PLUSH B PCHNITE C QUATAMA C RAYADO C PHORSE B PLUSH B PCHNITE C QUATAMA C RAYADO C PHORSE B PLUSH B PCHNITE C QUEBRADA C RAYPONOVILLE D PLICAGH. C PLUTOS C PCHNITE B PANTE B PLASA D PLUTOS C PCY O QUEETS B RAYNE B PLICACH. C PLYMCUTH A PCYGAN D QUEMAGL C RAYNESFCRO B PLICACH. B PCYGAN D QUEMAGL C RAYNAMA C PLICACH. B PLZC BLANCO B QUICKSELL C RAYNOR D PLICACH. B PLZC BLANCO B QUICKSELL C RAYNOR D PLICACH. B PLZC BLANCO B QUICKSELL C RAYNOR D PLICACH. B PCATELLO B PRAG C QUIGLEY B RAZCR C PLICACH. B PUCOMOKE C PATT A QUIMBY C READING C PICKHICK B PUCOMOKE C PATT A QUIMBY C READING C PICCH. B PLICACH. B PLICACH. B PLICACH. B PUCOMOKE C PATT A QUIMBY C READING C PICCH. B PLICACH. B PUCOMOKE C PATT A QUIMBY C READING C PICCH. B PLICACH. B PUCOMOKE C PATT A QUIMBY C READING C PATT A READING C PATT A QUIMBY C READING C PATT A READING C PATT A QUIMBY C READING C PATT										
PHILPS C PLUMER B/O PCHITE C QUATAMA C RAYADO C PHOPSE B PLUSH B PCHLEY O QUAY C RAYENDUF B PHOPSE B PLUSH B PCHLEY O QUAY C RAYENDUF B PHOPMIX O PLOTH B PCHARTA C QUEBRADA C RAYENDUF B PILASA D PLUTOS C PCY O QUEETS B RAYNE B PILASA D PLUTOS C PLYGON O QUEETS B RAYNE B PILACHO C PLYGON O QUEETS B RAYNE B PILACHO C PLYGON O QUEMADL C RAYNESFORO B PILACHO B POLAL C PCZC C/O CUENZER O RAYNHAM C PILACHO C POLACH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PILACHO B POLAL A PRAG C QUIGLEY B RAZOR C PILACHT B POLATELLO B PRATHER B CUILCENE C RAZORT B PILACHT B POLATELLO B PRATHER B CUILCENE C RAZORT B PICKHORD O POCKEP D PHATLEY C QUILLAVUTE B READING C PILACHT B PUCOMOKE C PATTY A QUIMBY C READINGTON C PILACHT B POLOMOKE C PATTY A QUIMBY C READINGTON C PILACHT B POLOMOKE C PATTY A QUIMBY C READINGTON C		-								
PHODES B PLUSH B PCHLEY O QUAY C RAYENOUF B PHOPNIX O PLOTH B PCHARKA C QUEBRADA C RAYPONOVILLE O PLASA D PLUTOS C PCHARKA C QUEBRADA C RAYPONOVILLE O PLASA D PLUTOS C PCY O QUEETS B RAYNE B PLACHE C PLYMCUTH A PCYCAN O QUEMAGC C RAYNESFCRO B PLCACHE B PCACH B PCYCAN O QUEMAGC C RAYNESFCRO B PLCACHE B PCACH B PCZC C C/O QUENZER O RAYNHAM C PLCKANAY C PCARCH B PCZC BLANCO B QUICKSELL C RAYNOR D PLCKENS D PCCATELLO B PRAG C QUIGLEY B RAZCR C PLCKENS D PCCATELLO B PRAGE C QUIGLEY B RAZCR C PLCKENS D PCCATELLO B PRATHER B CUILCENE C RAZCRT B PLCKENG D PCCATELLO B PRATHER C QUILLENGE C RAZCRT B PLCKENG D PCCATELLO B PLATLEY C QUILLENGE C RAZCRT B PLCKENG D PCCATELLO B PLCKENG C PLCKENG D PCCATELLO B PCCATELLO B PLCKENG C PLCKENG C PLCKENG C PACOLOR B PUCOMOKE C PATT A QUIMBY C READING C PLCCATE B PUCOMOKE C PATT A QUIMBY C READING C PLCCATE B POCOMOKE C PATT A QUIMBY C READING C PLCCATE B POCOMOKE C PACOLOR B CUINCY A READING C										
PHOPNIX O PLOTH B PCHMATKA C QUEBRADA C RAYPONOVILLE O PLASA D PLUTOS C PCY O QUEETS B RAYNE B PLACHC C PLYMOUTH A PCYGAN O QUEMAGE C RAYNESFCRO B PICAYUNE B PCALL C PCZC C/O QUENZER O RAYNHAM C PLCKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PLCKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PLCKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PLCKETI B PCCATELLO D PRATHER B QUILCENE C RAZCRT B PLCKFORD D PCALLA B PCATELLO D PRATLEY C QUILLAVUTE B READING C PLCKFORD D PRATLEY C QUILLAVUTE B READING C PLCKHOCK B PUCOMOKE C PPATT A QUIMBY C READINGTON C PLCKING B PUCOMOKE C PPATT A QUIMBY C READINGTON C PLCKING B POCOMOKE C PPATT B QUIMBY C READINGTON C										
PILASA D PLUTOS C PCY O QUEETS B RAYNE B PICACHO C PLYMCUTH A PCYGAN O QUEMADO C RAYNESFORO B PICAVUNE B POALL C PCZC C/O QUENZER O RAYNHAM C PICAVANY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZOR C PILKETT B POCATELLO B PRATHER B QUICKSELL C RAZORT B PICKFORD D POCKEP D PHATLEY C QUILLAVUTE B READING C PICKHICK B PUCOMOKE C PPATT A QUIMBY C READING C PICH B POOD D PREACHER B QUINCY A READING C										
PICACHO C PLYMOUTH A POYGAN O QUEMADU C RAYNESFCRO B PICAYUNE B POALL C POZC C/O QUENZER O RAYNHAM C PICAYUNE B POALL C POZC C QUICKSEL C RAYNHAM C PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKENS D POCALLA B PRAG C QUIGLEY B RAZCR C PICKENT B POCATELLO B PRATHER B CUILCENE C RAZCRT B PICKEND D POCKEP D PHATLEY C QUILLAYUTE B READING C PICKHICK B PUCOMOKE C PPATT A QUIMBY C READING C PICKHICK B PODO D PREACHER B CUINCY A READING D										
PICAYUNE A POALL C PCZC C/O QUENZER O RAYNHAM C PICKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKETI B PCCATELLO D PRATHER B QUILCENE C RAZCRT B PICKETOR D POCKEP D PRATLEY C QUILLAVUTE B READING C PICKHOK B PUCOMOKE C PPATT A QUIMBY C READINGTON C PICKHOK B PODO D PREACHER B QUINCY A READINGTON B										
PICKANAY C PCARCH B PLZC BLANCO B QUICKSELL C RAYNOR D PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PILKETI B PCCATELLO B PRATHER B CUILCENE C RAZCRT B PICKEGRO D POCKEP D PRATLEY C QUILLAVUTE B READING C PICKHOK B PUCOMOKE C PPATT A QUIMBY C READINGTON C PICH B PODO D PREACHER B CUINCY A READING D	PICAYUNE			C						
PICKENS D POCALLA A PRAG C QUIGLEY B RAZCR C PICKETI B POCATELLO B PRATHER B CUILCENE C RAZCRT B PICKETORU D POCKEP D PRATLEY C QUILLAYUTE B READING C PICKHICK B PUCOMOKE C PPATT A QUIMBY C READINGTON C PICH B PODO D PREACHER B CUINCY A READLYN B										
PICKETT B POCATELLO B PRATHER B CUILCENE C RAZCRT B PICKETHO D POCKEP D PHATLEY C QUILLAVUTE B READING C PICKWICK B PUCOMOKE C PPATT A QUIMBY C READINGTON C PICKWICK B POOD D PREACHER B CUINCY A READINGTON B						C	QUIGLEY			
PICKWICK B PUCOMOKE C PPATT A GUIMBY C READINGTON C PICCI B PODO D PREACHER B GUINCY A READLYN B							GUILCENE		RAZCRT	В
PICO B PODO D PREACHER B CUINCY A READLYN B										
PICTUU B PCDUKK E PREBISH O GUINLAN C REAGAN 8										
	MICHOU	В	PCDUNK	е	PREBISH	0	GUINLAN	C	REAGAN	8

A REANK HYDROLDGIC SOLE GROUP INDICATES THE SOLE CROUP MAS NOT REFU DETERMINED TWO SDIE CROUPS SUCH AS B/C INDICATES THE DRAINFO/UNDRAIMED SITUATION

REAKOR	В	RHOADES	D	RCCK RIVER	В	RUDYARE	C	SALPCN	в
REAL	D	RIB	C	RCCKTON	8	RUELLA	8	SALOL	D
REAP	D	RICCO	D	RCCKWELL	8	RUGGLES	В	SALCNIE	В
REARDAN	C	RICETON	в	RCCKWOCD	В	RUIDOSO	Ĺ	SALTAIR	D
REAVILLE	C	RICEVILLE	С	RGCKY FCRD	8	RUKO	Đ	SALT CHUCK	A
REBA	č	RICHARDSON	В	RCDDY		RULE	В	SALTER	В
			Ď						
REBEL	В	RICHEAU		RODMAN	A	RULICK	С	SALTERY	Đ
REBUCK		RICHEY	С	ROE		RUMBO	С	SALT LAKE	Ð
RECLUSE	0	RICHFIELD	С	RCEBUCK	D	RUMFORD	В	SAL UDA	С
REDBANK	В	RICHFORD	Α	ROELLEN	Đ	RUMNEY	С	SALUVIA	
RED BAY	В	RICHLIE	Ā	RCESIGER	8	RUMPLE	č	SALVISA	С
RED BLUFF	В	RICHMOND	C	RCHNERVILLE	В	RUM RIVER	С	SALZER	D
REO BUTTE	В	RICHTER	В	RCHRERSVILLE	C	RUNE	C	SAMBA	Ð
RFDBY	C	RICHVALE	В	ROKEBY	D	RUNNELLS	С	SAMISH	C/D
REDCHIEF	С	RICHVIEW	С	ROLETTE	С	RUNNYMEDE	В	SAMPAMISH	C
	В	RICHWOOD	В	ROLFE	č	RUPERT	A		Ď
KEDCLOUD								SAMPSEL	
REDDICK	С	RICKMORE	С	ROLISS	D	RUSCO	C	SAMPSON	В
REDDING	D	RICKS	Α	RCLLA	С	RUSE	D	SAMSIL	D
REDFIELD	В	RICREST	В	ROLLIN	D	RUSH	C	SAN ANDREAS	С
RED HILL	С	RIDD	С	ROLCEF	С	RUSHTCWN	Α	SAN ANTON	В
RED HOOK	č		č	PUMBO	č		Ē	SAN ANTONID	
		RIDGEBURY				RUSHVILLE			C
REDLAKE	D	RIDGECREST	С	ROMED	С	RUSS	В	SAN ARCACID	В
REDLANDS	В	RIDGEDALE	В	ROMNEY	С	RUSSELL	8	SAN BENITO	В
REDMANSON	В	RIDGELAND	D	ROMULUS	D	RUSSELLVILLE	С	SANCHEZ	U
REDMOND	Č	RIDGELAWN	A	RCND	Ō	RUSSLER	Č	SANDALL	č
REDNUN	č	RIDGELY	В	RCNNEBY	8	RUSTON	В	SANDERSCN	8
	В		В		В				
REDOLA		RIDGEVILLE		RGNSCN		RUTLAND	С	SANCLAKE	D
REDONA	В	RIDGEWAY	0	ROSACH!	С	RUTLEGE	D	SANCLEE	Α
REDRIDGE	В	RIETBROCK	С	RCSAMOND	В	RYAN	C	SANELI	D
REDROB	в	RIFFE	В	ROSANE	C	RYAN PARK	8	SAN EMIGDIO	В
RED ROCK	В	RIFLE	A/D	RCSARIC	č	KYDE	8/D	SANGER	В
RED SPUR	В	RIGA	D	RCSCCE	D	RYDER	С	SAN GERMAN	D
PEDSTOE	В	RIGGINS	Α	RUSCCMMCN	Ð	RYEGATE	В	SANGO	С
REDTHAYNE	В	RILEY	С	RCSEBERRY	В	RYEPATCH	0	SANGREY	A
REDIOM	Ċ	RILLA	В	ROSEBLCGM	D	RYER	Ċ	SANILAC	С
REDVALE	č	RILLITO	8	RCSEBUD	В	RYUS	č	SAN ISABEL	В
						K103			
REDVIEW	C	RIMER	C	RG SEBUR G	В			NIUDADL NAZ	D
REE	В	RIMINI	Α	ROSE CREEK	C	SABANA	C	SAN JON	С
REED	С	RIMROCK	D	ROSEGLEN	В	SABANA SECA	D	SAN JOSE	В
REEDER	В	RIN	8	RUSEHILL	D	SABENYO	8	SAN JUAN	A
REEDPOINT	č	RINCON	č	RCSELAND	ō	SABINA	č	SAN LUIS	В
REFDY	C	RINCONADA	C	ROSELMS	D	SABINE	Α	SAN MATEO	C
REELFOOT	С	RINGLING	C	RCSEMOUNT	В	SABLE	D	SAN MIGUEL	С
REESER	C	RINGC	D	ROSENDALE	В	SAC	В	SANPETE	A
REESVILLE	С	RINGCLD	В	RCSEVILLE	8	SACO	C	SANPITCH	С
KEFUGE	č	RINGWOOD	В	RCSEWORTH	č	SACRAMENTO	C/D	SAN POIL	В
REGAN	В	RIO	D	RCSHE SPRINGS	С	SACUL	D •	SAN SABA	D
REGENT	C	RIC ARRIBA	Ð	ROSITAS	A	SADULE	в	SAN SEBASTIAN	В
REHM	С	RIO GRANDE	В	RGSLYN	В	SADDLEBACK	В	SANTA	С
REICHEL	В	RIO KING	C	RCSMAN	В	SADIE	В	SANTA CLARA	С
REIFF	8	RIO LAJAS	A	RCSNEY	č	SADLER	č	SANTA FE	Ď
REILLY	A	RIO PIEDRAS	В	RCSS	В	SAFFELL	В	SANTA ISABEL	D
REINACH	В	RIPLEY	В	RCSS FORK	С	SAGAN ING	D	SANTA LUCIA	C
RELAN	A	RIPON	В	RCSSI	С	SAGE	D	SANTA MARTA	C
RELAY	В	RIRIE	В	RCSSMCYNE		SAGEHILL	В	SANTANA	С
RELIANCE	c	RISTA	c	RCSS VALLEY	č	SAGEMOOR	Ċ	SANTAQUIN	A
REL 17	Ď	RISUE	Ď	RCTAN				SANTA YNEZ	Ĉ
	_			-	С	SAGERTGN	c		
KELSE	В	RITCHEY	8	RCTHIEMAY	В	SAGINAW		SANTEE	0
REMBERT	D	RITNER	С	RCTHSAY	В	SAGC	D	SANTIAGO	8
REMMIT	Α	RITTER	В	RCUBIDEAU	С	SAGOUSPE	С	SANTIAM	C
REMSEN	D	RITTMAN	č	RGUEN	č	SAGUACHE	A	SAN TIMOTEO	Č
						SAHALI			
REMUDAR	В	RITZCAE	В	ROUND BUTTE	D		В	SANTCNI	D
REMUNDA	C	RITZVILLE	В	RCUNDTGP	C	SAINT ALBANS	В	SANTOS	C
RENFRUM	U	RIVERHEAD	В	RCUNDUP	С	SAINT CHARLES	В	SANTO TCHAS	В
RENO	D	RIVERSIDE	A	RCUNDY	Ċ	SAINT CLAIR	0	SAN YSIDRO	D
RENOHILL	Ċ	RIVERTON	В	RCUSSEAU	Ā	SAINT ELMO	Ā	SAPP	D
RENOVA	В	RIVERVIEW	В	RCUTON	D	SAINT CEORGE	Ĉ	SAPPHIRE	В
RENOX	В	RIVRA	Α	RCUTT	C	SAINT HELENS	A	SAPPINGTON	В
RENSHAW	В	RIXIE	C	RCVAL	D	SAINT TENACE	С	SARA	C
RENSLOW	В	RIZ	D	RChE	D	SAINT JOE	8	SARALEGUI	8
RENSSELAER	č	RCANCKE	Č	PERENA	Ď	SAINT JOHNS	3/0	SARANAC	Ċ
RENTIDE	č	RUBBINS	В	RCHLAND	č	SAINT LUCIE	A	SARAPH	Č
RENTON			D	RChLEY	В	SAINT MARTIN	С	SARATOGA	8
RENTSAC	8 / C								
REPARADA	C C	ROBERTS	Ď	RCXBURY	В	SAINT MARYS	В	SARCO	В
REPPART				RCXBURY KCY	B B	SAINT MARYS SAINT NICHCLAS	B C	SARCO SARDINIA	Č
	C D	ROBERTS ROBERTSDALE	D C	KCY	В	SAINT NICHCLAS	C	SARDINIA	C
	C D B	ROBERTS ROBERTSDALE ROBERTSVILLE	D C D	RCYAL	B 8	SAINT NICHCLAS SAINT PAUL	C B	SARDINIA SARGEANT	C D
REPUBLIC	C D B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN	D C D B	RCYAL RCYAL ROYALTON	В 8 С	SAINT NICHCLAS SAINT PAUL SAINT THOMAS	С В О	SARDINIA SARGEANT SARITA	C D A
REPUBLIC RESCUF	C D B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCBINSON	D C D B D	RCYAL RCYAL ROYALTON RCYSTONE	8 8 C 8	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO	С В D В	SARDINIA SARGEANT SARITA SARKAR	C D A D
REPUBLIC RESCUF RESERVE	C D B C B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCBINSON ROBINSON	D C D B	RCYAL RCYAL ROYALTON	В 8 С	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALADO	С В О	SARDINIA SARGEANT SARITA SARKAR SARPY	C D A C
REPUBLIC RESCUF	C D B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCBINSON	D C D B D	RCY RCYAL ROYALTON RCYSTONE PCZA	8 8 C 8	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO	С В О В	SARDINIA SARGEANT SARITA SARKAR	C D A D
REPUBLIC RESCUF RESERVE	C D B B C B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RULINSGNVILLE ROBLEDO	D C D B D B	RCY RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE	8 C B O B	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAU SALAMATOF	C B D B C	SARDINIA SARGEANT SARITA SAHKAR SAPPY SARTELL	C D A C A
REPUBLIC RESCUF RESERVF RESNER RET	C D B B C B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN KCHINSON ROF, INSGNVILLE ROBLEDO ROB ROY	D C D B D B	RCY RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA	8 C B O B	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS	B B C C	SARDINIA SARGEANT SARITA SARKAR SARKAR SARTELL SASKA	C D A A e
REPUBLIC RESCUF RESERVF RESNER RET RETRIEVER	C D B B C B B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCBINSON RCBINSONVILLE ROBLEDO ROB KOY	D C D B D B D C C	RCYAL RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE	8 C B O B C	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAD SALAL SALAS SALAS SALCHAKET	B B C C B	SARDINIA SARGEANT SARITA SAKKAR SARPY SARTELL SASKA SASSAFRAS	C D A C A e B
REPUBLIC RESCUF RESCRVF RESNER KET RETRIEVER RETSOF	C D B B C B B C C C	ROBERTS ROBERTSVILLE ROBIN RCBINSON ROBINSON ROB	D C D B D B D C C	RCYAL RCYAL ROYALTON RCYSTONE PCZA RCZELLVILLE FCZETTA RCZELE FCZETTA RCZEC	8 6 8 8 8 8 6 C	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALE	B B C C B E	SARDINIA SARGEANT SARITA SAKKAR SARPY SARTELL SASKA SASSAFRAS SASSER	C D A B B
REPUBLIC RESCUF RESERVF RESNEP KET RETRIEVER RETSOF RETSOF	C D B B C B B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCBINSON RCBINSONVILLE ROBLEDO ROB KOY	D C D B D B D C C	RCYAL RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE	8 C B O B C	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAD SALAL SALAS SALAS SALCHAKET	B B C C B	SARDINIA SARGEANT SARITA SAKKAR SARPY SARTELL SASKA SASSAFRAS	C B B C C
REPUBLIC RESCUF RESCRVF RESNER KET RETRIEVER RETSOF	C D B B C B B C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RCHINSONVILLE ROBLEDO ROB ROY ROBY RCCHE ROCHELLE	D C D B D B D C C	HCY RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBICGN	8 8 8 8 8 8 6 C	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SBURG	B B C C B E	SARDINIA SARGEANT SARITA SAKKAR SARPY SARTELL SASKA SASSAFRAS SASSER	C D A B B
REPUBLIC RESCUF RESCRAF RESNER KET RETRIEVER RETSOF RETSOF RETSOK REXBUNG	C B B C C B B C C B B B C C B B B C C B B B C C B B B C C B B B B C C B B B B B C B B B B B C C B B B B C B B B B C B B B C B B B B C B B B B C B B B B C B B B B C B B B B C B B B B B B B B C B B B B B B B B B B B B B B B B B B B B	ROBERTS DALE ROBERTS VILLE ROBIN KCBINSON ROBINSON ROBINSON ROB HOY ROBY RCCHE ROCHELLE ACCHEPORT	D C C C C C C	RCYAL RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE PCZETTA RCZLETTA RCZLEE PLARK RUBIO	8 C B B B C C A C	SAINT NICHCLAS SAINT PHUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SALEMSBURG SALS	В В В В С С В В В С	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASSAFRAS SASSER SATANKA SATANKA	C D A E B U C E
REPUBLIC RESCUF RESCREF RESNER KET RETRIEVER RETSOF RETSOF REXSUNG REXBUNG REXCH	C D B B C B B C C C C C C C C C C C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN KCHINSON ROLINSGNVILLE ROBLEDO ROB ROY ROBY RCCHE ROCHELLE ROCHELLE ROCKEPPORT ROCKAMAY	D C C C C C C	HCYAL RCYALTCN RCYSTCNE PCZA RCZELLVILLE PCZETTA RCZELEE PLARK RUBICAN RUBIO RUBIO	8 8 8 8 8 C A C 8	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEW SBURG SALGA SALGA SALGA	В В В В С С В В В С А	SARDINIA SARGEANT SARITA SARMAR SARPY SARTELL SASKA SASSAR SASSER SATANKA SATANKA SATELLITE	C D A C A A B B C B C
REPUBLIC RESCUP RESCRAF RESNER KET RETRIEVER RETSOF RETSOF RETSOK REXBURG REXCH REYCS	C B B C C B B C C B B B C C B B B C C B B B C C B B B C C B B B B C C B B B B B C B B B B B C C B B B B C B B B B C B B B C B B B B C B B B B C B B B B C B B B B C B B B B C B B B B B B B B C B B B B B B B B B B B B B B B B B B B B	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RCHINSON RCHINSON RCHEDO ROB HOY ROBY RCCHE RCCHELE RCCHEPORT RCCKAWAY RCCKASTLE	D C D B D B D C C C C C C C C C C C C C	RCYAL RCYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBIC RUBIC RUBY	8 8 C B D B B C C A C B B	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADU SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SALEM SALEM SALIDA SALIDA SALIDA SALINAS	C B B C C B B C A C	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASAFRAS SASSER SATANKA SATANTA SATELLITE SATT	C D A B B B C B C D
REPUBLIC RESCUF RESCRAF RESNER KET RETRIEVER RETSOF RETSOF REXBUNG REXCH REYCS REYCS	C D B B C B B C C C C C C C C C C C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN KCBINSON ROBINSON ROBINSON ROB HOY ROCHE ROCHELLE ACCHEPORT ROCKAMAY ROCKCASTLE ROCK CREEK	D C D B D D C C C C C C C D D	RCYAL RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE RCZETTA RCZLEE PLARK RUBIO RUBIO RUBY PUCH RUCKLES	8 8 C 8 D 8 8 C C A C 8 8 D	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEMSBURG SALEWSBURG SALIDA SALIDA SALIDA SALIDAS SALINAS SALISBURY	B B C C B E B C C A C D	SARDINIA SARGEANT SARITA SARKAR SARPY SASTELL SASKA SASSAFRAS SASSER SATANKA SATELLITE SATI	C D A B B B C B C D B
REPUBLIC RESCUP RESCRAF RESNER KET RETRIEVER RETSOF RETSOF RETSOK REXBURG REXCH REYCS	C D B B C B B C C C C C C C C C C C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RCHINSON RCHINSON RCHEDO ROB HOY ROBY RCCHE RCCHELE RCCHEPORT RCCKAWAY RCCKASTLE	D C D B D B D C C C C C C C C C C C C C	RCYAL RCYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBIC RUBIC RUBY	8 8 C B D B B C C A C B B	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADU SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SALEM SALEM SALIDA SALIDA SALIDA SALINAS	C B B C C B B C A C	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASAFRAS SASSER SATANKA SATANTA SATELLITE SATT	C D A B B B C B C D
REPUBLIC RESCUF RESCRAF RESNER KET RETRIEVER RETSOF RETSOF REXBUNG REXCH REYCS REYCS	C D B B C B B C C C C C C C C C C C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN KCHINSON RULINSGNVILLE ROBLEDO ROB ROY ROBY RCCHE ROCHELE ACCHEPORT ROCKAMAY ROCKCASTLE ROCK CREEK ROCK CREEK	D C D B D C C C C C D B B D C C C C C C	RCYAL RCYAL RCYAL RCYSTCNE PCZA RCZELLVILLE PCZETTA RCZELECON RUBIO RUBIO RUBIO RUCH RUCKLES RUCLICK	8 8 0 8 0 0 0 8 0 0 0 0 0 0 0 0 0 0 0 0	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEMSBURG SALEWSBURG SALIDA SALIDA SALIDA SALIDAS SALINAS SALISBURY	В В В С С В В В С А С С В В	SARDINIA SARGEANT SARITA SARKAR SARPY SASTELL SASKA SASSAFRAS SASSER SATANKA SATELLITE SATI	C D A B B B C B C D B
REPUBLIC RESCUP RESCRAP RESNER KET RETRIEVER RETSOF RETSOK REXBURG REXCR REYCS REYNOLDS REYNOLDS REYNOLDS REYNOLDS	C O B B C C B B A C / D B D	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RCHINSON RCHINSON ROB HOY ROBY RCCHE RCCHELE RCCHEPORT RCCKAMAY RCCKCASTLE ROCK CREEK ROCKFORD ROCKINGHAM	D C D B D C C C C C C D D B C C C C C C	RCYAL RCYAL RCYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBICON RUBIO RUBY FUCH RUCKLES RUCLICK	8 8 C B B B C C A C B B D C D	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SALEM SALEM SALIDA SALIDA SALIDA SALIDAS SALISBURY SALIX SALIX	В В В С С В В В С С В С В С В С В С В С	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASSAFRAS SASSER SATANKA SATANTA SATELLITE SATILEY SATTRE SATUS	C D A C A A B B C C B C D B B B B B
REPUBLIC RESCUF RESCRAF RESNER KET RETRIEVER RETSOF RETSOF RETSOK REXBUNG REXCK REYCS REYNOLDS REYNOLDS REYNOLDS REYWAT KHAME	C O B B C C B B B C C C C C C C C C C C	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN KCHINSON RCHINSONVILLE ROBLEDO ROB KCY ROBY RCCHE ROCHELLE RCCHEPORT RCCKASTLE ROCK CASTLE ROCK FORD ROCKINGHAM ROCKLIN	D C D B D C C C C C D B B D C C C C C C	RCYAL RCYAL ROYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBIO RUBIO RUBY PUCH RUCKLES RUCLICK RUCC	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	SAINT NICHCLAS SAINT PUUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEM SALEMSBURG SALGA SALIDA SALIDA SALIRAS SALIBBURY SALIX SALKUM 45ALLISAW	© B D B B C C B & B C A C D B C B	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASSAFRAS SASSER SATANKA SATELLITE SATTL SATTLEY SATTRE SATUES SAUGE	C D A C A A C C C D B G G B
REPUBLIC RESCUF RESCRAF RESNER KETRIEVER RETSOF RETSOF RETSOK REXBURG REXCK REYCS REYNOLDS REYNOLDS REYNOLDS REYNOLDS	C O B B C C B B A C / D B D	ROBERTS ROBERTSDALE ROBERTSVILLE ROBIN RCHINSON RCHINSON RCHINSON ROB HOY ROBY RCCHE RCCHELE RCCHEPORT RCCKAMAY RCCKCASTLE ROCK CREEK ROCKFORD ROCKINGHAM	D C D B D C C C C C C D D B C C C C C C	RCYAL RCYAL RCYALTCN RCYSTCNE PCZA RCZELLVILLE FCZETTA RCZLEE PLARK RUBICON RUBIO RUBY FUCH RUCKLES RUCLICK	8 8 C B B B C C A C B B D C D	SAINT NICHCLAS SAINT PAUL SAINT THOMAS SALADO SALAL SALAMATOF SALAS SALCHAKET SALEM SALEM SALEM SALEM SALIDA SALIDA SALIDA SALIDAS SALISBURY SALIX SALIX	В В В С С В В В С С В С В С В С В С В С	SARDINIA SARGEANT SARITA SARKAR SARPY SARTELL SASKA SASSAFRAS SASSER SATANKA SATANTA SATELLITE SATILEY SATTRE SATUS	C D A C A A B B C C B C D B B B B B

A BLANK HYDROLOGIC SOIL GROUP INDICATES THE SOIL GROUP HAS NOT REEN DETERMINED TWO SOIL GROUPS SUCH AS B/C INDICATES THE DRAINED/HYDRAINED SITUATION

NOTES

SAUGUS	В	SELFRIDGE	С	SHICCTON	В	SKIYCU	В	SPARTA	Α
SAUK	В	SELKIRK	D	SHIPLEY	C	SKOKCMISH	8/C	SPEARFISH	В
SAULICH	D	SELLE	В	SHIPROCK	В	SKOUKUMCHUCK	В	SPEARVILLE	С
SAUM	C	SELLERS	A/D	SHIRK	В	SKCWHEGAN	6	SPECK	D
SAUNDERS	C	SELMA	В	SHCALS	С	SKULL CREEK	D	SPECTER	D
SAUVIE	C/0	SEMIAHMOD	Č.	SHOEFFLER	В	SKUNFAH	C	SPEELYAI	C
SAUVUL A SAVAGE	C	SEMINADO	D	SHOK IN	D A	SKUTUM	C	SPEIGLE	6
SAVANNAH	C	SEMINARIO SEN	D B	SHCREWDCD	ĉ	SKYBERG SKYHAVEN	C D	SPENARC SPENCER	C B
SAVC	Č	SENECAVILLE	Č	SHEREY	В	SKYKCHISH	В	SPERRY	Č
SAVOIA	В	SECUATORIE	В	SHORN	В	SKALINE	Č	SPICER	Č
SAWABE	D	SEGUIM	A	SHORT CREEK	Ď	SKYWAY	В	SPILLVILLE	В
SAWATCH	č	SEGUCIA	ĉ	SECSHONE	Ď	SLAB	č	SPINKS	A
SAWCREEK	8	SERENE	Ď	SHCTWELL	D	SLATE CREEK	č	SPIRIT	В
SAWMILL	č	SERNA	ē	SHOUNS	В	SLAUGHTER	č	SPIRD	В
SAWYER	Č	SERDCD	A	SHCHALTER	c	SLAVEN	C	SPLENDCRA	Č
SAXBY	Ď	SERPA	C/D	SHOWLCW	č	SLAHSCN	В	SPLITROCK	Ď
SAXCN	В	SERVCSS	D	SHREWSBURY	D	SLAYTON	C	SPCFFORD	С
SAYBROUK	В	SESAME	č	SHRINE	В	SLEETH	č	SPDKANE	В
SAYLESVILLE	С	SESPE	С	SHRCUTS	D	SLETTEN	0	SPONSELLER	В
SAYLOR	A	SESSIONS	С	SHUBUTA	С	SLICKROCK	В	SPDON BUTTE	D
SCALA	В	\$E S S UM	D	SHULE	В	SLIGHTS	C	SPOCNER	C
SCAMMAN	С	SETTERS	C	SHULLSBURG	С	SLIGC	В	SPOTTSWCOD	В
SCANDIA	В	SETTLEMEYER	D	SHUMWAY	D	SLIKDK	С	SPRAGUE	B/C
SCANTIC	С	SEVERN	В	SHUPERT	С	SLIP	В	SPRECKELS	С
SCAR	A	SEVILLE	D	SHUWAH	В	SLCAN	C	SPRING	C/D
SCARBORU	0	SEAA	С	SI	В	SLOCUM	6	SPRING CREEK	С
SCAVE	С	SEWARD	В	SIBLEANIFF	В	SLDDUC	C	SPRINGDALE	В
SCHAFFENAKER	A	SEWELL	В	ZIBAFEE	D	SLOSS	C	SPRINGER	В
SCHAMBER	A	SEXTON	D	SICILY	В	SLUICE	В	SPRINGERVILLE	D
SCHAMP	C	SEYMOUR	c	SICKLESTEETS	C	SMARTS	В	SPRINGFIELD	D
SCHAPVILLE	C	SHAAK	0	SIDELL	8	SMITH CREFK	A	SPR INGHEYER	C
SCHEBLY	D	SHADELAND	c	SIFANCIA	В	SMITHNECK	В	SPR INGTOWN	C
SCHERRAPD	D	SHAFFER	A	SIEBER	A	SMITHTON	D	SPUR	В
SCHLEY SCHNORHUSH	В	SHAKOPEE	C D	SIELC SIERCCLIFF	C D	SMCLAN SMOCT	C D	SPURLOCK	В
SCHOOACK	С	SHALCAR Sham	D	SIERRA	В	SNAG	В	SQUALICUM SQUAW	B B
SCHODSON	С	SHAMBO	В	SIERRAVILLE	В	SNAHCPISH	В	SQUILLCHUCK	В
SCHOFIELD	В	SHAMEL	В	SIESTA	Ď	SNAKE	č	SQUIM	8
SCHCHARIE	Č	SHANAHAN	В	SIFTON	8	SNAKE HOLLOW	В	SQUIRES	В
SCHOLLE	č	SHANDON	U	SIGNAL	Ď	SNAKELUM	В	STAATSBURG	U
SCHOOLEY	Č/D	SHANE	D	SIGURD	В	SNEAD	Ď	STABLER	8
SCHRIER	В	SHANO	В	SIKESTON	Ď	SNELL	č	STACY	В
SCHROOK	В	SHANTA	В	SILCCX	В	SNELLING	6	STADY	В
SCHUMACHER	В	SHAPLEIGH	C/D	SILENT	ō	SNOHCMISH	Ö	STAFFORD	č
SCHUYLKILL	В	SHARATIN	6	SILER	В	SNOQUALMIE	В	STACECOACH	В
SCIC	В	SHARKEY	Ď	SILERTON	В	SNDW	В	STAPL	č
SCIOTUVILLE	С	SHARON	В	SILI	D	SNOWDEN	С	STALEY	С
SCISM	В	SHARPSBURG	В	SILVER	D	SNOWL IN	В	STAMBAUGH	В
SCITUATE	C	SHAR VANA	С	SILVERBOW	D	SNOWVILLE	D	STAMFORD	D
SCOBEA	С	SHASKIT	B/C	SILVER CREEK	D	SNOWY	A	STAMPEDE	D
SCOOTENEY	В	SHASTA	A	SILVERTON	С	SOAP LAKE	В	STAN	8
SCORUP	С	SHAVANO	В	SILVIES	D	SDBOBA	A	STANDISH	C/D
SCUTT	D	SHAVER	8	SIMAS	С	SOBRANTE	C	STANEY	D
SCOTT LAKE	В	SHAWANO	A	SIMCOE	С	SODA LAKE	В	STANFIELD	C
SCOUT	Α	SHAWMUT	В	SIMECH	A	SDOHOUSE	C	STANLEY	С
SCOWLALE	С	SHAY	D	SIMMLER	D	SCDUS	С	STANSBURY	D
SCRANTUN	8/0	SHEAR	C	SIPNER	A	SCELBERG	В	STANTON	D
SCRIBA	C	SHECKLER	C	SIMON	С	SOFIA	C	STAPLETON	В
SCRIVER	В	SHECO	С	SIMCNA	В	SCGN	D	STARBUCK	D
SCROGGIN SCULL IN	C C	SHEEGE SHEEP CREEK	D C	SIMPERS SIMPSON	8	SOCITE	В	STARICHKOF STARKS	D
SEABROOK	Ā	SHEEPHEAD	č	SIMS	C D	SOL AND SCLDATNA	O B	STARR	C B
SEAMAN	Ĉ	SHEEPHEAD	A	SINAI	C	SDLCIER	D	STASER	В
SEAQUEST	Č	SHEETIRON	Ĉ	SINCLAIR	В	SOF DOC	В	STATE	В
SFARCHLIGHT	č	SHEFFIELD	Ď	SINE	Č	SOLLEKS	č	STATEN	Ď
SEARING	В	SHEL BURNE	č	SINGLETREE	Ď	SCLLER	D	STAVE	c
SEAKLA	В	SHELBY	В	SINGSAAS	В	SCLOMON	Ď	STAYTON	Ď
SEARLES	Č	SHELBYVILLE	В	SINNIGAM	č	SOLONA	В	STEAMBOAT	Ď
SFATON	В	SHELDON		SINUK	В	SOMBREKO	D	STEARNS	D
SEATTLE	D	SHEL IKOF	С	SIDN	6	SOMERS	В	STECUM	A
SEBAGL	D	SHELLABARGER	В	SICUX	A	SCMERSET	C	STEED	A
SEBASTIAN	D	SHELLDRAKE	A	SIPPLE	A	SOMEKVELL	В	STEEDMAN	D
SEBASTOPOL	С	SHELLROCK	A	SISKIACA	8	SCMSEN	С	STEEKEE	С
SEBEKA	D	SHELMADINE	D	SISSETCN	в	SCNCITA	В	STEELE	В
SEBEWA	B/D	SHELDCTA	В	SISSON	В	SDNCMA	D	STEESE	C
SEBREE	D	SHELTON	c	SITES	C	SCNTAG	C	STEFF	С
SEBRING	D	SHENA	C	SITKA	6	SCPER	8	STEGALL	C
SECATA SECRET	C C	SHENANDDAH	c	SIXMILE	В	SCOUEL	В	STEIGER	A
		SHEPPARD	A	SIZEMORE	В	SORF	C	STEINAUER	В
SECRET CREEK SEDAN	В	SHER IDAN SHERM	B	SIZER	8	SCRPENTO	8 / 0	STEINBECK	В
SEECSKAGEE	D	SHERRYL	D	SKAGGS	B B/C	SCRTER SCSA	B/D	STEINMETZ STEINSBURG	D
SEES	Č	SHIBLE	B e	SKAGIT Skama	B/C	SCTELLA	C C	STEIMER	C
SEEWEF	В	SHIELOS	Č		ć	SDUTHFORK	ח		C D
SEGAL	D	SHIFFER	B	SKALAN Skapania	В	SUUTHGATE	E	STELLAR STEMILT	C
SEGND	č	SHILCH	Ĉ	SKAPCKANA	В	SOUTHWICK	č	STENDAL	c
SEHORN	D	SHINAKU	c	SKANEE	č	SPAA	D	STEPHEN	C
SEJITA	Ď	SHINGLE	Ď	SKELLCCK	В	SPACE CITY	A	STEPHENSBURG	В
SEKIU	Ö	SHINGLETOWN	č	SKERRY	J	SPADE	В	STEPHENVILLE	В
SELAH	č	SHINN	В	SKILLET	С	SPALDING	C	STERLING	A
SELDEN	č	SHINROCK	č	SKINNER	č	SPANAWAY	В	STERL INGTON	ē
	NOTES	A BLANK HYDR	OLOGIC	SOLE GROUP INDI	CATES	THE SOIL GROUP HA	TO'S	REEN DETERMINED	
		TWO SOIL GPO	UPS SU	CH AS B/C INDICAT	TES TH	E DPAINED/IIIPPRAIT	ED SI	TUAT ION	

STETSON STETTER	B D	SUNSET SUNSHINE	8 C	TALLAECCSA TALLEYVILLE	C B	TENSAS TENSED	D C	TIMKEN TIMERMAN	D 8
STEUREN	8	SUNSWEET	č	TALLS	В	TENSLEEP	В	TIMPONS	6
STEVENS	8	SUPAN	В.	TALLULA	8	TEOCULLI	θ	TIPPAHUTE	D
STEVENSON STEWART	D 6	SUPERIOR SUPERSTITION	C A	TALLY TALMAGE	B	TEPEE TEPETE	D 8/D	TIMPANCGOS TIMPER	8
STICKNEY	č	SUPERVISOR	ĉ	TALMO	В	TERINO	c c	TIPPOONEKE	В
STIDHAM	A	SUPPLEE	В	TALCKA	D	TERMINAL	D	TIMULA	В
STIGLER STILLMAN	C A	SUR SUK G H	8 8	TALPA TAPA	D B	TERMC TEROUGE	C	TINA TINCAHAY	C A
STILLWATER	D	SURPRISE	В	TAMALCO	D	TERRA CEIA	A/D	TINE	Ã
STILSON	В	SURR ENCY	B/D	TAMBA	C/0	TERRAD	D	TINSLEY	A
STIMSON STINGAL	8/C 8	SURVYA SUSIE CREEK	C D	TAPMANY CREEK	В С	TERRERA TERRIL	C B	TINTOWN	A B
STINSON	č	SUSITNA	B	TAMPICO	ě	TERRY	B	TIOCANO	Ď
STIRK	D	SUSQUEHANNA	D	TANAPA	D	TERWILLIGER	C	TIOGA	В
STIRUM STISSING	8	SUTHER SUTHERLIN	C	TANANA TANBERG	C D	TESAJO TESCOTT	A C	TIPPAH TIPPECANOE	C B
STIVERSVILLE	Θ	SUTPHEN	Ď	TANDY	C	TESUQUE	8	TIPPER	Ā
STOCKBRIDGE	В	SUTTLER	В	TANEUM	Ç	TETON TETONIA	A B	TIPPERARY	A
STUCKLAND Stockpen	8 D	SUTTON SVEA	8 8	TANEY TANGAIR	C C	TETCNIA	Č	TIPPIPAH TIPPO	D C
STUCKTON	Ď	SVERORUP	В	TANNA	C	TETCTUM	č	TIPTON	8
STUDICK	D	SVOLD	c	TANNER	C	TEW	B/D	TIPTONVILLE	В
STOKES STOMAR	C	SWAGER SWAKANE	C B	TANSEM TANTALUS	B	TEX TEXLINE	8 e	TIRA TISBURY	8
STONER	В	SHAN	č	TANWAX	D	TEZUMA	č	TISCH	č
STONEWALL	Α	SHANBOY	D	TACPI	C	THACKERY	e	TISH TANG	В
STONO STONYFURD	B/D D	SWANNER SWANSON	D C	TACS TAPIA	C C	THA DER THA NYCN	C A	TITUSVILLE	C A
STOUKEY	8	SWANTON	8/0	TAPPEN	ŏ	THATCHER	B	TIVELI	Â
STOPDEN	В	SWANTOWN	C	TARA	В	THATUNA	C	TIVY	C
STORLA STORM KING	B D	SWAPPS SWARTSWOOD	C C	TARKIC TARKLIN	D C	THAYNE THEBES	8 8	TOA TOBICO	C D
STORY	č	SHARTZ	Ď	TARPC	č,	THEBC	Ď	TOB IN	8
STOSSEL	C	SWASEY	D	TARPANT	C	THEDULUND	C	TOBLER	В
STOUGH STOWELL	C D	SWASTIKA SWATARA	C A	TARYALL TASCOSA	8 0	THENAS THERESA	C B	TOBCSA TOBY	D B
STOY	Ď	SWAUK	ĉ	TASSEL	Ď	THERICT	Ď	TOCCOA	8
STRAIGHT	C	SWAHILLIA	Δ	TATE	В	THERMAL	C	T000	Θ
STRAIN STRASBURG	B C	SWEATMAN SWEDE	C B	TATIYEE	C	THERMCPCLIS THETFORD	D A	TODCLER TODDVILLE	8
STRATEGRD	В	SWEDEN	в	TATUM	č	THIOKCL	ć	TOEHEAD	č
STRAUSS	C	SHEEN	L	IAUNIUN	C	THEENY	D	TOE JA	C
STRAW STRAWN	8	SWEENEY SWEET	B C	TAVARES TAWAS	A A/D	THOMAS THORNDALE	C	TOE# TOGO	C B
STREATUR	č	SHEETGRASS	В	TAYLOR	ĉ	THORNDIKE	C/D	TOHCNA	Č
STROLE	8	SWEETWATER	0	TAYLOR CREEK	D	THORNOCK	D	TOINE	C
STRONGHURST STRONTIA	8	SWENUDA SWIFTON	B	TAYLCRSFLAT TAYLORSVILLE	D C	THORNTON THORNWCCO	C B	TOKEEN	C C
STROUPE	D	SHIMS	A	TAYSOM	B	THEREUGHFARE	8	TOKUL	В
STRYKER	в	SWINGLE	Ð	TAZLINA	A	THORP	C	TOFBA	В
STUKEL	C B	SWISBOB SWITCHBACK	O C	TEAL TEALWHIT	D C	THORR THORNEL	B	TOLEDO TOLICHA	D D
STUMBLE	A	SHITZERL AND	В	TEANAMAY	č	THOW	8	TULL	A
STUMPP	D	SWOPE	c	TEAPC	В	THREE MILE	C	TOLLGATE	В
STUMP SPRINGS STUTTGAPT	B D	SWYGERT SYCAPORE	C B	TEAS TEASDALE	C B	THUNCERBIR C Thurber	C C	TCLLHOUSE TOLNA	D B
STUTZVILLE	B/C	SYCAN	A	TEBO	B	THURLONI	Č	TOLC	B
SUBLETTE	В	SYLACAUGA	B/C	TECHICK	В	THURLOW	C	TOLSONA	D
SUDHURY SUFFIFID	B C	SYLVAN SYMERTON	B	TECCLOTE TECUMSAH	8 8	THURMAN THURMONT	A	IOLSTOI TOLT	D D
SUGARLDAE	В	SYNAREP	6	TECRCH	В	THURSTON	θ	TOLTEC	č
SUISUN	0	SYKACUSE	В	TEEL	8	TIAK	C	TCLUCA	В
SULA SULLY	6 8	SYRENE SYRETT	C C	TEHACHAPI TEHAMA	D C	TIBBITTS TICA	B C	TOLVAR Tomah	B C
SUL PHURA	ñ			TFJA	D	TICE	c	TOMAS	B
SUL TAN	8	TABERNASH	В	TEJCN	В С	TICHIGAN TICHNER	C	TOMAST	C
SUMAS Sumdum	B/C 0	TABLE MCUNTAIN	B B	TEKCA TELA	В	TICKAPOO	C	TOPERA TOPICHI	D A
SUMMA	8	TABLER	D	TELEECNC	Ď	TICKASUN	ĕ	TOMCKA	A/D
SUMMERFIELD	C	TABCR	C	TELEPHONE	D	TIOWELL	D	TONATA	c
SUMMERS SUMMERVILLE	B C	TACCMA TACUCSH	D 0	TELFER TÉLL	A G	TIEKRA TIETCN	С В	TCNAHANCA TCNEY	C D
SUMMIT	C	TAFT	C	TELLER	В	TIFFANY	č	TONGUE RIVER	В
SUMMITVILLE	В	TAGGERT	C	TELLICC	В	TIFTUN	В	TONINI	8
SUMTER SUN	C	TAHOMA TAHOUAMENON	ម ព	TELLMAN TELSTAD	B B	TIGER CREEK Tigeron	B A	TONKA	C U
SUNAURST	č	TAHQUATS	č	TEMESCAL	D	TIGINON	8	TCNKS	ē
SUNGURY	В	TAINTOR	c	TEMPLE	B/C	TIGRETT	_	TONCPAH	В
SUNCOUK	A C	TAJO TAKEUCHI	C	TEMVIK TENABL	6 0	TIGUA Tijeras	B D	TONCWEK	8 8
SUNDELL	č	TAKILMA	в	TENAHA	В	TILFCHD	В	TONUCU	8
SUNCERLAND	C/0	TAKOTNA	В	TERAS	C	TILLEDA	В	TOCLE	D
SUNOCHN SUNFIELD	8 B	TALANTE TALAPUS	C P	TENCEE TENERIFFE	C	TILLICUM TILLMAN	e C	TOCMES TOP	D C
SUNNILAND	C	TALBOTT	Ċ	TENEX	A	TILMA	Č	TOPPENISH	B/C
SUNNYHAY	D	TALCOT	C	TENIBAC	В	TILSIT	C	TOPTON	
SUNNYS I DE SUNNYVAL F	в С	TALIHINA TALKEETNA	D C	TENING TENNO	В О	TILTON TIMBERG	В С	TOQUERVILLE TOQUOP	D A
SUNRAY	c	TALLAC	В	TENOT	Č	LIMBERTA	B	TORBCY	В
SUNRISE	C NOTES	TALL ADECA	C	TENHER	В	IIMENTWA PF SOLL GROUP HA	В	TORCHL IGHT	С

TORHUNTA TORNING	C B	TRUCKEE TRUCKTON	C B	UKIAH ULEN	C B	VASHTI VASGUEZ	C B	VOLKE VOLKE	B C
TOROGA	В	TRUESDALE	č	ULLOA	В	VASSAR	В	VOLKHAR	В
TORONTO	С	TRULL	C	ULM	В	VASTINE	C	VOLNEY	В
TORPEDC LAKE	С	TRULON	В	ULRICHER	В	VAUCLUSE	C	VOLPERIE	C
TORREON	C	TRUMAN	В	ULUPALAKUA	В	VAUGHNSVILLE	C	VOLTAIRE	D
TORRES	В В	TRUMBULL Trumr	D D	ULYSSES UMA	8	VAYAS VEAL	0 B	VOLUSIA VONA	C
TORRINGTON	Č	TRYON	D	UMAPINE	B/C	VEAZIE	В	VORE	B B
TORRO TORTUGAS	D	TSCHICOMA	č	UMIKCA	В	VEBAR	В	VRGCMAN	В
TOTEM	В	TUB	č	UMIL	Ď	VEBAR	В	VULCAN	Č
TOTTEN	В	TUBAC	Č	UMNAK	В	VEGA	Ċ	VYLACH	ŏ
TOUCHET	В	TUC ANNON	C	UMPA	В	VEGA ALTA	C		
TOUNEY	В	TUCKERMAN	D	UNA	D	VEGA BAJA	C	WABANICA	D
TOULON	В	TUCUMC ARI	C	UNADILLA	B B	VEKOL	D B	WABASH	0
TOURN TOURNOUIST	C B	TUFFIT TUGHILL	0	UNAWEEP UNCCMPAGHRE	Č	VELMA VELVA	В	WABASHA WABASSA	D B/D
TOURS	В	TUJUNGA	A	UNEEDA	В	VENA	В	WABEK	8
TOUTLE	A	TUKEY	c	UNGERS	В	VENANGO	č	WACA	Č
TOWER	D	TUKWILA	Ď	UNION	c	VENATOR	Ď	WACCTA	B
TOWNER	В	TULA	C	NWOTHOLAU	В	VENETA	C	WACCUSTA	C
TOWNLEY	C	TULANA	C/D	UNIONVILLE	C	VENEZIA	D	WADAMS	В
TOWNSBURY	В	TULARE	C/D	UNISCN	C	VENICE	D	WADCELL	В
TOWNSEND	C B	TUL AROS A	C B	UPSAL	C C	VENLC VENUS	D B	WADDOUPS	В
TOWSON TOXAWAY	0	TULIA TULLER	D	UPSHUR UPICN	Č.	VERBCORT	D	WADENA WADESBORO	В В
TOY	D	TULLOCK	В	URACCA	В	VERDE	č	WAOLEIGH	Č
TOYAH	В	TULLY	č	URBANA	č	VENDEL	Ď	WADMALAW	Ö
TOZE	В	TUMBEZ	D	URBG	0	V_RDELLA	D	WADSWORTH	Č
TRABUCO	C	TUMEY	D	URICH	D	VERDIGRIS	В	WAGES	В
TRACK	В	TUMITAS	В	URNE	В	VEROUN	0	WAGNER	D
TRACY	В	TUMWATER	A	URSINE	C	VERGENNES	C	WAGRAM	A
TRAER	C A	TUNEHEAN	D D	URTAH URWIL	C D	VERHALEN VERMEJO	C D	WAHA	C D
TRAIL TRAIL CREEK	В	TUNICA TUNIS	0	USAL	В	VERNAL	8	WAHEE WAHIAWA	В
TRANSYLVANIA	В	TUNKHANNOCK	A	USPAR	В	VERNALIS	В	WAHIKULI	В
TRARPER	A	TUNNEL	В	USINE	В	VERNON	D	WAHKEENA	В
TRAPRIST	C	TURELO	C	USKA	0	VERONA	C	WAHKIACUS	В
TRASK	C	TUPUKNUK	D	UTALINE	В	VESSER	C	WAHLUKE	В
TRAVER	B /C	TURBEVILLE	C	UTE	C	VESTON	C	WAHPETON	C
TRAVESSILLA TRAVIS	C C	TURBOTVILLE TURBYFILL	C B	UTICA UTLEY	A B	VETAL VETERAN	A B	WAHTIGUP WAHTUM	В 45
TRAWICK	В	TURIN	В	UTUAGO	В	VEYO	D	WAIAHA	B/C C
TRAY	č	TURK	Ď	UVACA	Ď	VIA	В	WAIAKOA	č
TREADWAY	Ď	TURKEYSPRINGS	č	UVALDE	c	VIAN	8	WATALEALE	Ď
TREASURE	В	TURLEY	С	UMALA	В	VIBORAS	D	WAIALUA	8
TREBLOC	D	TURLIN	В			VIBORG	В	MAIAWA	0
TREGO	C	TURNBOW	C	VACHERIE	C	VICKERY	C	WAIHUNA	D
TRELONA	D B	TURNER	В	VADER	В	VICKSBURG	В	WAIKALCA	В
TREMBLES TREMRE	A	TURNERVILLE TURNEY	B B	VADC VAIDEN	A 0	VICTOR VICTORIA	A C	WAIKANE WAIKAPU	8 B
TREMPEALEAU	B	TURRET	В	VAILTON	В	VICTORY	В	WAIKOMO	Ď
TRENARY	В	TURRIA	č	VALCC	č	VICU	Č	WAILUKU	ė
TRENT	В	TUSCAN	D	VALCEZ	B/C	VIUA	В	WAIMEA	В
TRENTON	D	TUSCARAWAS	C	VALE	В	VIDRINE	C	WAINEE	6
TREP	В	TUSC ARORA	С	VALENCIA	В	VIENNA	В	WAINCLA	Α
TRES HERMANOS TRES HERMANOS	C	TUSCOLA TUSCUMBIA	B C	VALENT VALENTINE	A A	VIEQUES	В	WAIPAHU	C
TRETTEN	c	TUSEL	c	VALERA	C	VIEW VIGAR	C	WAISKA WAITS	B B
TREVINO	Ď	TUSKEEGO	č	VALKARIA	B/D	VIGO	0	WAKE	D
TREXLER	č	TUSLER	В	VALLAN	D	VIKING	Ď	WAKEEN	8
TRIAMI	C	TUSQUITEE	В	VALLECITOS	C	VIL	C	WAKEFIELD	В
TRIASSIC		TUSTIN	В	VALLERS	С	VILAS	Α	WAKELAND	8/0
TRICON	C	TUSTUMENA	В	VALPONT	C	VILLA GREVE	В	WAKENDA	C
TRIDELL	В	TUTHILL	В	VALMY	В	VILLARS	В	WALCOTT	В
TRIDENT TRIGO	D C	TUTTLE TUTWILER	8 8	VALCIS	В О	VINA VINCENNES	В С	WALGECK WALGO	C D
TRIMBLE	В	TUXEDO	U	VANADA	D	VINCENT	C	WALCRON	D
TRIMMER	В	TUXEKAN	В	VAN BUKEN	-	VINEYARD	č	WALDROUP	Ö
TRINCHERA	C	TWILACKS	Α	VANCE	C	VINGC	В	WALES	č
TRINITY	D	TWIN CREEK	В	VANDA	D	VINING	C	WALFCRD	C
TRIPLEN	C	TWINING	C	VANDALIA	C	VINITA	Ċ	WALKE	C
TRIROLI TRIPR	C B	TWISP TWO DOT	В	VANCERDASSON	0	VINLAND VINTON	C	WALL	8
TRITON	Č	TYEE	C O	VANDERGRIFT VANDERHOFF	C D	VIRA	B C	WALLACE WALLA WALLA	B
TRIX	8	TYGART	D	VANDERLIR	A	VIRATON	č	WALLER	B/D
TROJAN	В	TYLER	D	VAN DUSEN	ä	VIRDEN	č	WALLINGTON	c
TRUMMALD	D	TYNDALL	6/C	VANET	С	VIRGIL	8	WALLIS	В
TROMP	B/C	TYNER	Α	VANG	В	VIRGIN REAK	D	MALLKILL	C / C
TRONSEN	В	TYRONE	C	VANHORN	В	VIRGIN RIVER	D	WALLMAN	C
TROOK	8	TYSON	С	VAN NESTERN	В	VIRTUE	6	WALLOWA	C
TROPAL TROSI	D D	LIBAR	С	VANNEY	В В	VISALIA	B C	WALLPOCK	0
TROUR	A	UBAR UBLY	8	VANUSS VANTAGE	C B	VISTA	В	WALLROCK WALLSBURG	8 D
TROUT CREEK	ĉ	UCOLA	C	VAN WAGONER	D	AIAE2	8	WALLSON	В
TROUTDALE	8	UCCRIA	В	VARCO	č	VLASATY	č	MALPOLE	Č
TROUT LAKE	C	UDEL	D	VARELUM	С	VCCA	C	WALSH	В
TROUT RIVER	A	UDOL PHO	C	VARICK	D	VCDERMATER	е	WALSHVILLE	D
TROUTVILLE	8	UFFENS	D	VARINA	C	VCLADORA	В	WALTERS	A
TROXEL	В	UGAK	D	VARNA	C	VCLENTE	C	WALTON	С
TROY TRUCE	C	UHLIG UINTA	8 8	VARRC VARYSBURG	B B	VOLGA VOLIN	D B	WALLM	B B
	NOTES				-		-	WALVAN F BEEN DETERMINED	
	, 23	TWO SOIL GRO	UPS SU	CH AS B/C INDIC	ATES THE	DPAINED/UNDPAI	MED SI	TUATION	

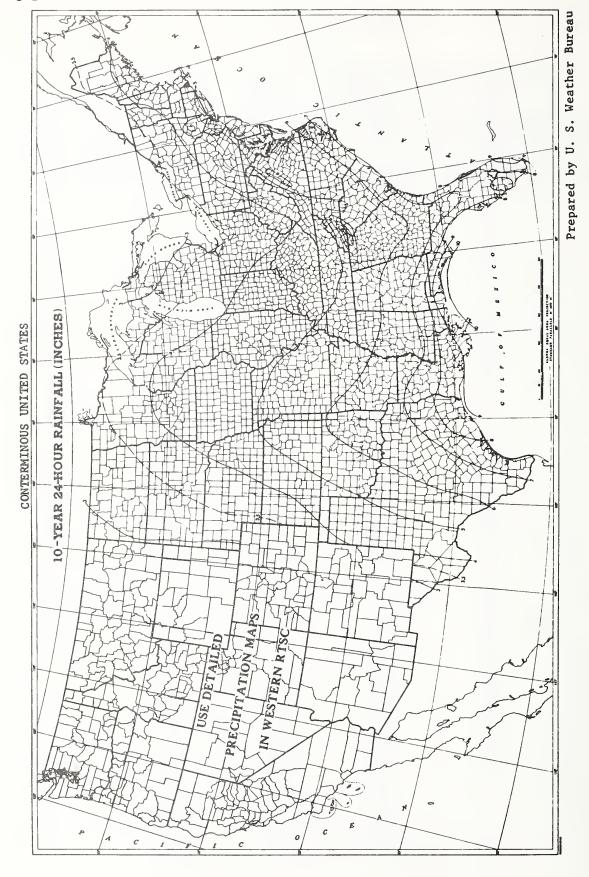
MAMPSVILLE B MEINER WANATAH B MEINER WANATTA A MEISER WANATTA A MEISER WANN A MEISER WANN A MEISER WAPATO C/O MEIST WAPATO C/O MEIST WAPATO B MELOA WARATO B MELOA WARATO B MELOA WARATO C MELLER WANATO B MELLEN WARATO B MELLINE WARATO B MELLEN WARATO B MELLSTY WARMEN C MELLSTY WARMEN B MELOA WARATO B MELLEN WARATO B MELLSTY WARMEN B MELOA WARATO B MELLEN WARATO B MELLEN WARATO B MELLSTY WARMEN B MENDA WARATO B MESTAD WARATO B MESTAD WARATO B MESTAD WASATO B M	H C D B C C C C C C C C C C C C C C C C C	M M M M M M M M M M	GGLETON LORAHAM LORA LOCU LCCX LCCXSGN LOCAT LOGEN LOGEN LOGEN LORGSE LOWGCD LEY LKES LKESGN LKESGN LKESGN	A B D C C D C D B C C C D C D B C D D C C C D D B C D D B C C A B B B C C B B	WINZ WIOTA WISHEYLU WISKAH WISKER WITBECK WITCH WITHAM WITHEE WITTEL WCDEN WCDSKOW WCLCCTTSBURG WCLCCTTSBURG WCLCCTTSBURG WCLF WCLF WCLF WCLF WCLF WCLF WCLF WCLF	СВССООООСССВВ СВСВВСАВССОВСОАВСВВОВСОСАОССВВССВ	YANA YAQUINA YAQUINA YAQUINA YARDLEY YATES YAMEIM YAWKEY YEATES HOLLOW YEGEN YELF YENRAB YECHAN YETULL YODER YUKCHL YOLLABCLLY YOLC YOLLABCLLY YOLC YOLCAGG YCHCNT YONCALLA YONGES YONNA YORCY YORK YORKVILLE YOST YOUGA YOUMAN YOUNGSTCN YOUMAN YOUNGSTCN YOUMAN YOUNGSTCN YOUMAN YOUNGSTCN YOUMAN YUNGS YOUMAN YUNGS YOUMAN YUNGS YOUMAN YUNGS YUNGUE ZAAR ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	0
MANGLE MANDID A MEIRMAN MANFITA A MEISSA AANN A MEISSA MAPAL BANDAL BAPPAL BAPP	D B C C C C C C C C C C C C C C C C C C	MH MH MH MH MH MH MH MH	ITWELL CLAN BAUX CHITA CHUP CKERSHAM CKETT CKHAM CKIUP CKLIFFE CKSBURG DISGE EHL EN GGLETCN LGRAHAM LBUR LCCX LCCXSCN	C C D C D B C B C C C D C D B C D D C C C D D B C C A B B B C C B B	WISKAH WISNER WITHEE WITHAM WITHEE WITHAM WITHEE WITTEL WCDEN WGDSKOW WCLCCTTSBURG WOLDALE WCLF WOLFESEN WDLFCKO WOLFESEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODESEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODEN WOODESEN WOODESEN WOODESEN WOODESEN WOODEN	C D O O C C C C B B C C C C B C C C C B C C C C B C C C C B C C C C B C C C C C C C C C C C C C C C C C C C C	YARLEY YATES YAMEIN YAMKEY YAWKEY YAXCN YEATES HOLLOW YEGEN YECHAN YETULL YOUGR YOKCHL YOLCAC YOLCGC YOLCGC YOLCGC YONCALLA YONGALLA YONGES YONNA YORCY YORK YOLK YOLGO YORAN YOUGA	C D C C B C B B A B B C D B B C D C B C B A D C A D D D C D C B D B
HANDO HANDO HANN HANN HANN HANN HANN HANN HANN HAN	B C C C C C C C C C C C C C C C C C C C	HHH WIELE WIELE	CLAM BAUX CHUP CHUP CKLIFFE CKSBURG DTSGE EN GCLETCN LBRAHAM LBUR LCCX LCCXSGN LCCXSGN LCCXSGN LCCXSGN LCCAT LOCAT	C D C C D B C C C C D C D B C C C C D D B C C C C	WISNER WISNER WITSEK WITCH WITCH WITCH WITCH WITTEE WITZEL WCDEN WCDSKOW WCLCCTTSBURG WCLEF WCLFF WCLF WCL	DO O C C C C B B C C A B C C D B C O A B C B B C B C C C B B C C	YATES YAMDIM YAMKEY YAXCN YEATES HOLLOW YEGEN YELFM YEVENTAB YECMAN YETULL YODER YOKCHL YOLLABCLLY YOLC YOLCOC YOLCOC YOLCOC YOLCOC YOMAN YORKYILLE YONA YORKYILLE YOST YOUGA YOUPAN YOUGSTCN YOURAME YOUTAPA YURBIDE YUKON YUNGS YUNGUE ZACA ZACHARIAS ZACHARIAL	O C C B C B B A B C D B B C D C B C B A D C A O O D C D C B D B D B C D C B C B A D C A O O D C D C B D B D B D B D B D B D B D B D
AANN A WEISHAL BANN A WEISSS WAPAL B WEITCHE MAPATH C/O WELBY MAPATH B WELCH MAPATH B WELCH MAPINITIA B WELCH MAPINITIA B WELCH MAPINITIA B WELCH MAPSTE B WELCH MAPSTE B WELCH MAPSTE B WELCH MAPSTE B WELCH MARCELL C WELLER MARCEL B WELLSTO MARM SPRINGS C WEPLE MARREN C WEELSTO MARREN B WELLSTO MARREN B WESSEL MASSING B WESSTEN MASSING B WELLSTO MASSING B WESSTEN MASSING B WESSTEN MASSING B WELLSTO MASSING	PT		CHITA CHUP CKERSHAM CKETT CKHAM CKIUP CKLIFFE CKSBURG DISOE EHL BUR LCG LGRAHAM LCG LCCXSCN LCCXSCN LCCXSCN LCCXSCN LCCXSCN LCCXSCN LCCXSCN LUCAT LUCA	C	WITCH WITHAM WITHAE WITHEE WITT WITZEL WCDEN WODSKOW WCLCCTTSBURG WOLDALE WCLF WOLFESEN WOODEN WOODENVILLE WOODENVILLE WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODENVILE WOODLYN WOODLYN WOODLYN WOODLYN WOODSTOE WCOORGE WOODSTOE WOODSSTEELD WOODSTOE WOODSTO	O C C C C B B C C A B C C O B C O A B C B B C B C C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C C C C C C C C C C C C C C C C C	YAMKEY YAXCN YAXCN YEATES HOLLOW YEGEN YELM YENRAB YECHAN YETULL YODER YUKCHL YOLCA YOLCA YOLCA YOLCA YOLCA YOLCA YOLGO YCMCNT YONGALLA YONGES YONNA YORCY YORK YORKVILLE YOST YOUGA YOUMAN YOUNGSTCN YOUMAN YOUNGSTCN YOUMAN YUNGSTCN YOUNGSTCN YOU	C B C B B A B C D B C D C B C B C B C B C B C B C B
MANN A MEISS MEITCH MAPATH C/O BELBY MAPAL B MEITCH MAPATH C/O BELBY MAPATH B MELO MARAD D MELLER MAROUL C MARAD D MELLER MAROUL C MELLER MARAD D MELLST MARMAN D MELLST MARMAN D MELLST MARMAN D MELLST MARAD B MELLST MARAD B MELLST MARAD B MELLST MARAD B MENTO MARATH B MENTO MARATH B MENTO MARATH B MESSEL MARATH B MESSEL MARATH B MESSEL MASATCH A MESSEL MASATCH B MESSTAND MASTING B MESSTAND MASATCH B MESSTAND MASTING B MESSTAND MASATH B MESSEL MASATCH B MESSTAND MASTING B MESSTAND MATCHUNG D MESSTAND MESSTAND MATCHUNG D MESSTAND MESSTAND MATCHUNG D MESSTAND MESSTAND MATCHUNG D MESSTAND MESSTAND MESSTAND MESSTAND MESSTAND MESSTAND MESSTAND MESSTAND MATCHUNG D MESSTAND MESSTAN	EC B C C C C C C C C C C C C C C C C C C		CHUP CKERSHAM CKETT CKHAM CKLIFFE CKIJUP CKLIFFE CCSSBURG GCLETCN LGRAHAM LGR LCCX LCCXSGN LCC	0 B C B C C C D C D B C C C D D B C C C D B C C C B B C C C B B C C B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B C C B B B B B B C C B B B B B B C C B B B B B B C C B B B B B B C C B B B B B B C C B B B B B C C B B B B B B C C B B B B B B B C C B B B B B B C B B B B B C B B B B B B B B B C B B B B B B C B B B B B B B B B B B B B B B B B B B B	WITHAM WITHEE HITT WITZEL WCDEN WCDSKOM WCLCCTTSBURG WCLCF WCLF WCLF WCLF WCLF WCLF WCLF WCL	CCCCBB CBCABCCOBCOABCBBCBCCADCCBBCC	YAXON YEATES HOLLOW YELP YELP YENRAB YECMAN YETULL YOUGE YOKCHL YOLCGC YCHCOT YONCALLA YONGES YONNA YORKY YORK YORKYILLE YOST YOUGA YOUGA YOUGA YOUGA YOUGA YOUGA YUBA YURBIDE YUBA YUKGN YUNGS YUNGS YUNGS YUNGUE ZACA ZACHARIAS	8 C B B A B B C D B C D C B C B A D C C A O D D C D C B D U
HAPAL HAPATIT C/O MELBY HAPATIT B MELCH HARATOR A MELLER HARATOR HAPATIT B MELLSS HAPATIT B MELLSS HAPATIT HAPATIT B MELLSS HAPATIT HA	EC	MIC MIC	CKERSHAM CKETT CKHAM CKIUP CKLIFFE CKSBURG DTSGE EHL EN GCLETCN LGRAHAM LBUR LCC LCCX LCCXSGN LCCX LCCXSGN LCCX LCCXSGN LCCX LCCXSGN LCCX LCCX LCCX LCCX LCCX LCCX LCCX LCCX	8 C B C C C B C C C C C C C C C C C C C	HITHEE HITT HITZEL WCDEN WITZEL WCDEN WGDSKOW WCLCCTTSBURG WOLDALE WCLF WDLFESEN WDLFCRO WGLF PCINT WCLFTEVER WCODBRIDGE WCODBINE WCODBRIDGE WCODBRIDGE WCODBRIDGE WCODBRIDGE WCODBLY WOODLY WOODLY WOODLY WOODLY WOODLY WOODLY WOODLY WOODLS WCODSCN WCODSTCEN	С С С В В С С В В С С О В С О А В С В В С В С С С В В С С О С А В С В С С С В В С С	YEATES HOLLOW YEGEN YEGEN YELW YENAB YETULL YOUGR YOKCHL YOLCAC YOLCGC YOLCGC YONCALLA YONGES YONNA YORCY YORK YORKYILLE YOUGA YUNGSTCN YOUGA YUNGSTCN YUNGSTCN YUNGSTCN YUNGST YUNGUE ZAAR ZACHARIAS ZACHARIAS ZACHARIAS ZACHARIAS ZAFRA ZAHILL ZAHL	C B B A B B C D B C C B C B A D C C A D D C C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C B D U U C
MAPPLIC B WELCH WAPINITIA B WELD ON MAPPING B WELD ON MELD ON MAPPING B WELD ON MELD ON MAPPING B WELD ON MELD ON MEND	C C C C C C C C C C C C C C C C C C C		CKHAM CKHIPF CKSBURG OTSOE EHL EN GGLETCN LBRAHAM LBRAHAM LCC LCCXSCN LCCXSCN LCCXSCN LOCAT LOERNESS LDEGSE LCWOCC LEY LKESGN LKINS LL LLAKENIE LLAMAR LLAMETTE LLAMAR LLAMETTE LLAMAD LLIAMS L	8 C C C C C C C C C C C C C C C C C C C	WITZEL WCDEN WCDSKOW WCLCCTTSBURG WOLDALE WCLF WCLFESEN WDLFECRO WGLF PCINT WGLFTEVER WGUDBINE WCGDBRIDGE WGOBENT WCGDBURY WCGDCUCK WODDENVILLE WGGOGLEN WGODDHNST WGGOGLEN WGGUGLEN WGGLEN	© 8 8	YELM YENAB YENAB YENAB YECHAN YETULL YOLGE YOKCHL YOLLABCLLY YOLC YOLCGO YOMMA YORCY YONNA YORCY YONNA YORKY YORKYILLE YOST YOUGA YOUMAN YOUNGSTCN YOUNABE YOUYMPA YIUNGSTCN YUNGA YUNGSTCN YUNGA YUNG	8 A B B C D B C D B C D C B C B A D C C A D D C C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C B D U U D C D C B D U U D C D C B D U U D C D C B D U U D C D C D C B D U U D C D C D C B D U U D C D C D C B D U U D C D C D C D C B D U U D C D C D C D C D C D C D C D C D
MAPINITIA B WELD MAPPING B WELDON MAPSIC B WELDON MELLOR MAPSIC B WELDON MELLOR MAPSIC B WELDON MAPSIC B WELLOR MAPSIC B WELLER MARCHELL C WELLST WAFMAN B WENATCH WARRENTON B WENATCH WARRENTON B WENATCH WARRENTON B WENTON WARSING B WENTON WASSING B WENTON WASSING B WESTEN WASAICH A WESU WASSING B WESTEN WASAICH A WESU WASSING C WESTFOR WASAICH B WESTEN WASAICH B WESTFOR WATCHUNG B WESTFOR WATCHUNG B WESTFOR WATCHUNG B WESTFOR WATCHUNG B WETTEL WATCHUNG B WHETLEL WATTHUNG C WHEATTE WAUGHOND B WHELCHE WAUGHOND B WHELCHE WAUGHOND B WHELCHE WAUGHOND B WHILDON WAWAWAY C WHITE E WAYCHUP B WHITECA WHITECA WAYCHUP B WHITECA WAYCHU	C C C C C C C C C C C C C C C C C C C	M	CKIUP CKLIFFE CKSBURG DTSGE EHL EN GCLETCN LBRAHAM LBUR LCC LCCX LCCXSCN LCCXSCN LCCXSCN LOCAT LOER LOER LOER LOER LOES LUCKSCN LLEY LKES LWESGN LKINS LL LLACY LLAKENZIE LLAMAR LLACY LLAMAR LLAPA LL	C B C C C C C C C C C C C C C C C C C C	WCDEN WCDEN WCDEN WCDEN WCDEN WCLCCTTSBURG WCLCCTTSBURG WCLFESEN WCLFESEN WCLFECO WCLFESEN WCLFECO WCLFESEN WCLFESEN WCLFESEN WCLFESEN WCLFESEN WCOBBINE WCOBBINE WCOBBINE WCOBBINE WCOBBINE WCOBURN WCOBURN WCOBURN WCOBURN WCOBOLYN WCOBOLYN WOODLYN WOODSTOEN WCOBSTEELD WOODSTOEN WCOBSTEELD WOODSTOEN WCOBSTEELD WOODSTOEN WCOBSTEELD WOODSTOEN WCOBSTEELD WOODSTOEN WCODSTCKN WCOBSTEELD WOODSTOEN WOODSEE	8 B C B C C C C B C C C A B C C C B C C C C	YENRAB YECHAN YETULL YODER YOKCHL YOLLABCLLY YOLC YOLCGG YCMCNT YONGALLA YONGES YONNA YORKY YORKY YORKY YORKYILLE YOUGA YOUMAN YOUNGSTCN YOUMAN YOUNGSTCN YOUNABE YOVIMPA YUSIDORA YTURBIDE YUBA YUKGN YUNGS YUNGUE ZAAR ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHLL ZAHL	A B A B C D B D B C D B C D C B C D C B D D C D C
BAPPING BAPAIC BARD BARD BARD BARD BARD BARD BARD BARD	C C C C C C C C C C C C C C C C C C C		CKLIFFE CKYSBURG OTSGE EHL EN GGLETCN LBRAHAM LBUR LCCX LCCXSGN LCCXSGN LOCAT LIAMS LLIAME LLIAME LLIAME LLIAMS L	B C C C C C C C C C C C C C C C C C C C	WODSKOM WCLCCTTSBURG WCLEF WCLF WCLF WOLFESEN WDLFCRO WGLF PCINT WGLFTEVER WGLYERINE WCODBRIDGE WGODBRIDGE WGODBRIDGE WGODBRIDGE WGODBRY WGCGCGCK WOODENVILLE WGODLYN WOODHANSIE WGODLYN WOODFANSIE WGODLYN WOODFANSIE WGODSTCK WGOD	8	YECMAN YETULL YODER YOKCHL YOLLABCLLY YOLC YOLCGC YCMCGC YCMCGT YONCALLA YONNA YOREY YORK YORKYILLE YOST YOUGA YOUGA YOUGA YOUGA YOUMAN YOUNGSTCN YOURAME YOUYAN YUNGSTCN YOURAME YUNGN YUNGS YUNGN YUNGS ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	8 A B C D B C D B C C D C B C D C B C D C B C D C B C D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C B D C C C B D C C C B D C C C B D C C C C
HAPHA MARD MARD MARD MARD MARDELL MARGELL MARGEL MA	ORN C TON D B B B B B B B B B B B B B B B B B B		OTSOE EHL EN GCLETCN GCLETCN GCLETCN LORAMP LBUR LCC LCCXSCN LCCXSCN LOCAT LOER LORGSE LOWOCC LEY LKES LKESGN LKINS LL LLAKENZIE LLAMENTE LLAMAR LLAMB	C C C C C C C C C C C C C C C C C C C	WOLDALE WOLFESEN WOLFESEN WOLFECRO WOLF PCINT WOLFTEVER WOUVERINE WCOGBRIDGE WCOGBRIDGE WCOGBRIDGE WCOGBRIDGE WCOGBRIDGE WCOGBRIDGE WCOGLEN WOODENVILLE WCOGLEN WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODSIDE WCOGROW WOODSIDE WOODSIDE WOODSTCK WCOGSTCKN WCOGST	B C B B C C C D B C C A B C B C D C A D C C B B C C	YOUER YUKCHL YULCHE YULCHE YULCGG YCMCNT YONCALLA YONGES YONNA YOREY YORK YORKYILE YOUGA YOUFAN YOUNGSTCN YOURANE YOUNFAN YUNGSTCN YOURANE YUVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGUS YUNGUS ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	B C D B O B C D C B C D C B C D C B C D C B C D C B C D C B C B
HARD DO DESTING HELLER HARDELL DESTING HARDELD	ORN C TON D B RO C N B LLE B S/C EE C TH B OK D Y C EK B TILLE C LD D D STFFR C E E STFFR C E TH E B OK D D D STFFR C E E E B C C C C C C C C C C C C C C C	MIE MIE	EHL EN GCLETCN LORAHAM LORAHAM LOC LCCX LCCXSCN LOCAT LOCAT LOERESS LORGSE LOWOCC LEY LKESGN LKINS LL LLAKENIE LLAMAR LLAMETTE LLAMAR LLAMETTE LLAMAD LLIAMS	C O B C C C O O B C C C O O B C C A / D B B C C B B B C C B B	WCLF WOLFESEN WOLFECKO WOLF PCINT WOLFTEVER WOLVERINE WCODBINE WCODBINE WCODBUNY WCCDCOCK WOODENVILLE WOCOGLEN WOODHANST WOODLY WOODLY WOODLY WOODLY WOODLY WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WCODSTOEN WCODSTOEN WCODSTOEN WCODSTOEN WOODSTOEN WCODSTOEN WOODSTOEN WCODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODSTOEN WOODLMAN WOOLPER WOOLESEY	B C B B C C C D B C C A B C B C D C A D C C B B C C	YOKCHL YOLLABCLLY YOLCGO YCMCONT YONCALLA YONGES YONNA YORCY YORK YORKVILLE YOST YOUGA YOUNGSTCN YOUNAN YOUNGSTCN YOUNAN YINDA YINDA YINDA YINDA YUNGSTCN YUNGA YU	C D B O B C C B C C B C C B C C B C C B C C B C C C C C C C C C C C C C C C C C C C C
HANDURAL AA (OEN B MELLERM AA (OEN B MELLMAN MARDWELL C MELLNER WANEHAY C MELLSY WANEHAY C MELLSY WANEHAY C MERLSY WANEHAY C MERLSY WANEHAY C MERLSY WANEHAY C MERLSY WANENTOR B MENAS WARSING B MENDEL MARKIDR MENDEL MARKIDR B MENDEL MARKIDR B MENDEL MARKIDR B MENDEL MASSING B MENDEL MASSING B MESSEL WASSING B MESSEL WASHINGTON B MESSEL MASHINGTON B MESSTORE MATLENDO C MESSTORE METHEL MATTON C MHATLON MATSONI C MHATLON MATLENDO C MELLER MULLER MAUCON S MHELLON MAUCON S MHILLON MAYOUP B MHITTER MAYOUP B MHITTER MAYOUP B MHITTER MAYOUP	ORN C TDN D RO C N B LLE B B S/O EE C TH B B C OK D Y C EK B C LL C LD D D D STER C E E E E E E E E E E E E E E E E E E E	WIST	EN GGLETCN LBRAHAM LBUR LCCX LCCXSGN LCCXSGN LCCXSGN LOCAT LOER LORGSE LOWOCC LEY LKES LKESGN LKINS LL LLACY LLAKENZIE LLAMAR LLACY LLAMETTE LLAMAR LLAPA LL	O B C C C C O O B C C C C O D B C C C B B C C B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B C C C B B C C C B B B C C C B B B C C C B B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B B C C C B C C C C C C C C C C C C C C C C C C C C	WOLFESEN WOLFESEN WOLFECRO WOLF PCINT WOLFTEVER WOLVERINE WCOGBRIDGE WOODBURN WOODDENVILLE WOCOGLEN WOODDLY WOODLY WOODLYN WOODLYN WOODLYN WOODLYN WOODLYN WOODSTOE W	C B B C C O B C O A B C B B C B C D C A D C C B B C C	YOLLABCLLY YOLC YOLCGO YCMCNT YONCALLA YONGES YONNA YORKY YORKY YORKYILE YOST YOUGA YOUPAN YOUNGSTCN YOUNGAPE YOVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGU ZARA ZACAARIAS ZACHARIAS ZACHARY ZAHILL ZAHL	D B C D B C D C B D D C D C B D D C
AARDEN AARDEN	A B B C C C TH B B C C C TH B C C C TH B C C C TH B C C C C T C C C C C C C C C C C C C C	HILL WILL WILL WILL WILL WILL WILL WILL	LBRAHAM LBUR LCC LCCX LCCXSCN LCCXSCN LCCAT LOER LOERNESS LCRGSE LCWOCC LEY LKES LKESCN LKESCN LKESCN LLACY LLAKENZIE LLAMENTE LLAMPA LLAMPA LLAMPA LLAMPA LLAMPA LLAMS LLIAMS LL	C C C C C C C C C C C C C C C C C C C	WOLF PCINT WOLFTEVER WOLDERINE WCODBINE WCODBINE WCODBURN WOODBURY WCODCOCK WOODENVILLE WCODLY WOODLY WOODLY WOODLY WOODLY WOODS WOODLS WOODS WO	8 C A B C C O B C O A B C B B C D C A D C C B B C C	YOLCGC YCMCATLA YONGES YONNA YORCY YORK YORKYILLE YOST YOUGA YOUMAN YOUMGSTCN YOUMANE YOUMAN YOUMGSTCN YOUMANE	O B C O C B C C B A D C C A D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C B D D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C D C C
HAP DWELL HAP DWELL HAP WARENAY WARENAY WARENAY WARENAY WARRENTON WARRENTON WARRENTON WARRENTON WARRIDK WASHICK WASHIC	RO	WILL WILL WILL WILL WILL WILL WILL WILL	LBUR LCCX LCCXSCN LCCXSCN LCCXSCN LCCXSCN LOCAT LOER LOERCSE LOENCCC LEY LKES LKESON LKINS LL LLACY LLAKENZIE LLAMETTE LLAMAR LLAPA	C C C C C C C C C C C C C C C C C C C	WOLFTEVER WOLVERINE WCOBBINE WCOBBINE WCOBBINE WCOBBINE WCOBURN WCOBURN WCOBURN WCOBOLY WCODCK WOODLY WOODS WCOBOR WOODS WOODS WOODS WOODS WOODS WOODS WOODS WCODS WC	C A B C C O B C O A B C B B C D C A D C C B B C C	YCMCNT YONCALLA YONGES YONNA YORKY YORK YORKYILLE YOST YOUGA YOUMAN YOUNGSTCN YOUNAN YOUNGSTCN YOUNANE YOVIMPA YSIDDRA YTURBIDE YUBA YUKON YUNGU ZAR ZACHARIAS ZACHARIAS ZACHARY ZAHILL ZAHL	B C D B / O B C D C B C D C B C B C B C B C B C B C
MAKEHAY WAKEHAY WAKEHAY WAKEHAY WARENTON WARM SPRINGS WARENTON WARRENTON WARRENTON WARRENTON WARSTON WARSTON WARRENTON WENTHOR WARRENTON WARRENTON WARRENTON WARRENTON WARRENTON WE	RO C N B S/C EEE C TH B OK D Y C EK B CIL C LD D D STFFR C/L E E B/C	WILL WILL WILL WILL WILL WILL WILL WILL	LCC LCCXSCN LCCXSCN LCCXSCN LCCXSCN LCCXSC LCCX LCCX LCCX LCCX LCCX LCCX LC	C O C O O B C C C O O B C C C A/D B C C A/D B B B B C C B B B B C C B B	WOLVERINE WCODBINE WCODBINE WCODBRIDGE WCODBURY WCCDCOCK WOODENVILLE WCOGGLEN WDODHWRST WOODLYN WOODLYN WOODLYN WOODERS WCODSTCK	A B C C O B C O A B C B B C D C A D C C B B C C	YONCALLA YONGES YONNA YORCY YORK YORKVILLE YOST YOUGA YOUPAN YOUNGSTCN YOURAME YOVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGS YUNGS YUNGS ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C
MARMAN DELLSY MEMPLE APPRENS C MEMPLE APPRENS A/D MENAS MENATCH MENATCH MENATCH MENATCH MENAS MENATCH MENAS MENATCH MENAS MENAS MENATCH MENAS ME	LLE 9 8 8/0 8/0 6EE C 8/0 7 8 8 0 C 8 0 Y C EK 8 C LL C LD D D D STFFR C 6/1 E 8	WILL WILL WILL WILL WILL WILL WILL WILL	LCCXSGN LOCAT LOCAT LOCAT LOCRES LORGSE LOWGCD LEY LKES LKESGN LKINS LL LACY LLAKENZIE LLAMETTE LLAMAR LLARD LLETTE LLAMAS LLIAMS LLIAM	C O B C C C C O O B C C C A / D B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B B C C C B B B B C C C B B B B C C C B B B B C C C B B B B B C C C B B B B B C C C B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C C B B B B B C C C B B B B B C C C B B B B B C C C C B B B B B C C C B B B B B C C C B B B B B C C C C B B B B B C C C B B B B B C C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B B C C C C B B B B B C C C C B B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B B C C C C B B B B C C C C B B B B B C C C C C B B B B C C C C C B B B B C C	WCGGRIDGE WCGGRIDGE WCGGURY WCGDCGCK WCGGLEN WCGGLEN WCGGLEN WCGGLYN WCGGLYN WCGGLYN WCGGLYN WCGGLYN WCGGLYCR WCGGRCW	C C D B C O A B C B B C D C A D C C B B C C	YONNA YORKY YORKY YORKYILLE YOST YOUGA YOUPAN YOUNGSTCN YOURAPE YOVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGU ZAAR ZACHARIAS ZACHARIAS ZACHARY ZAHLL ZAHL	8/O 8 C D C B C B C B C D C C B C D C B D C C B D C D C
HARM SPRINGS C WEPPLE WARREN WENATCH WESTING WENATCH WESTING WESTER WASATCH WESTER WESTER WASATCH WESTER WASHUNGAL WESTER WESTER WATHOUGH WESTER WETTER WATHOUGH WATHOUGH WATHOUGH WATHOUGH WATHOUGH WATHOUGH WATHOUGH WANGON WEELL WATTON CHARLON WALKAN WALKAN WALKAN DWHIPPST WAUGH WAUCONDA B WHEELCH WAUCONDA B WHIPPST WAUCH WAUCONDA B WHIPPST W	B 8/6 EEE C 8/6 TH B C B C C B C C C C C C C C C C C C C	WILL WILL WILL WILL WILL WILL WILL WILL	LOCAT	O B C C C C C C C C C C C C C C C C C C	HOODBURN HOODBURY HOCODUCK HOODBENVILLE HOCOGLEN HOODHURST HOODLY HOODBENSIE HOODBERE	C O B C O A B C B B C D C A D C C B B C C	YORCY YORK YORKYILLE YOST YOUGA YOUMAN YOUMGSTCN YOURAME ZACA ZACHARIAS ZACHARIAS ZACHARIAS ZACHARIAS ZAFRA ZAHILL ZAHL	8 C O C B C B A O D C C B D C C B D C C
HAPMERS A/D BENAS WARRENTON B/O BENDEL WARRENTON B/O BENDEL WARRIDK MENDAM WARSING B BENTWOR WARRICK A WERNER WASATCH A WESTEL WASHIURN BESSEL WASHIURN BESTBRE WASHIURN BESTBRE WASHIURN C/T WESTFAL WASHIUR C/MESTFAL WASHIUR C/MESTAL WASHIUR C/MESTFAL WASHIUR C/MESTFAL WASHIUR C/MESTFAL WASHIUR	C	C WILL WILL WILL WILL WILL WILL WILL WILL	LOER LOERNESS LOENGCE LEY LKES LKESGN LKINS LL LLACY LLAKENZIE LLAMETTE LLAMAR LLAPA	B C D D C C C C D B C C D B C C C C B B C C C B B B C C C B B B C C C B B B C C C B B B C C C B B B C C C C B B B C C C C B B B C C C C B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C B B B B C C C C C B B B B C C C C C C C C C C C C C C C C C C C C	WOOGBURY WCCDCOCK WCCDCCK WCCOGLEN WDODENVILLE WCCOGLEN WDODHURST WCODLYN WOODLYN WOODMANSIE WCDOMERE WCDO RIVER WCCORCW WCOGROW WOODS CRCSS WCCDSFIELD WCODSIDE WCODSIDE WCODSTCKN	D B C O A B C B B C D C A D C C B B C C	YORK YORKYILLE YOST YOUGA YOUMAN YCUNGSTCN YOURAME YOVIMPA YSIDORA YTURBIDE YUBA YUKGN YUNGS YUNGU ZAR ZACA ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHLL ZAHL	C
HARRENTON BY MENDEL MENHAM MARSAM B MENDAM MARSING B MENTHOR MENTHAM MARSAM B MENDAM MARSING B MENTHOR MENTHAM MASCAM B MESTERS MASHLUR B MESTERS B MESTERS MASSIL B MESTERS MATCHONG D MESTERS MASSIL B MESTERS MATCHONG D MESTERS MESTERS MESTERS MESTERS MESTERS MESTERS B METHERS MATCHONG B MEEL B MACHOLA BY D MEEL B MACHOLA BY D MEEL B MAUCONDA B MHEEL B MAUCONDA B MHILL B MAUCON	B/C TH B B C C B OK C Y C EK B C ILLE C L D D D S STER C C E E E E E E E E E E E E E E E E E E	C WILL WILL WILL WILL WILL WILL WILL WILL	LORGSE LCWOCD LEY LKES LKESSON LKINS LL LLACY LLAKENZIE LLAMAR LLAMPA LLAMPA LLAMPA LLATE LLAMB LLATE LLAMB LLIAMS LLIAMS LLIAMS LLIAMSCN LLIAMSCN LLIS LLITS LLUUGHBY LLCW CREEK	D O C C C C D O B C C D B C C A/D B C C C B B C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C B B C C C C C B B C C C C C B B C C C C C B B C C C C C C C C C C C C C C C C C C C C	WODDENVILLE WCCGLEN WDODHURST WOODLY WOODLYN WOODLYN WOOD RIVER WCCGROCK WCUGROW WOODS CRCSS WCCDSFIELD WOODSTOE WCODSTCK WCODSTC	C O A B C B B C D C A D C C B B C C	YOST YOUGA YOUNGSTCN YOUNGSTCN YOURAME YOVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGS YUNGUE ZAAR ZACA ZACHARIAS ZACHARY ZAFRA ZAHLL ZAHL	C B C B A D C A D D C C B D C C B D B D B
MARTION MARSING MARMICK MARMICK MARMICK MARMICK MARMICK MASATCH MASSPI MASHURN MASHURN MASHURN MASHURN MASHINGTON MASHINGTON MASHINGTON MASHEMAN MASHICA MATCHUNG MATCHUN	C TH B B B C C C B B C C C C C C C C C C C	bill bill bill bill bill bill bill bill	LOWOCC LEY IKES IKESON LKINS LL LLACY LLAKENZIE LLAMETTE LLAMAR LLAMETTE LLAPA LLARD LLETTE LLHAND LLIAMS L	O C C C O O O B C C C A/D B C C C A/D B B C C C B B B C C C C B B C C C C B B C C C B C B C C C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B C B	WGCGGLEN WGGGLEN WGGDLYN WGGDLYN WGGDLYN WGGDMERE WGDGMERE WGCGRGCK WGUGRGW WGGDSTCKCSS WGGDSFIELD WGGDSTDE WGGDSTCK WGUDSTCK WGGDSTCK WGG	O A B C B C D C A D C C B B C C C	YOUGA YOUMAN YOUNGSTCN YOURAME YOVIMPA YSIDDRA YTURBIDE YUBA YUKGN YUNGS YUNGUE ZACA ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHLL ZAHL	B C B A D C A D D C C B D C B D B
MARSAN B MENDA MARSING B MENTMOR MARMICK A MEPNER MASATCH A MESU MASEU B MESSEL MASHBURN BESSEL MASHBURN C MESSTER MASHBURN C MESSTER MASHBURAL C MESSTER MASILI A C MESSTER MASILI A C MESSTER MASILI A C MESSTER MASSILI A MATAB C MESSTER MASSILI A MATAB C MESSTER MATCHANIG D MESSTER MATCHANIG D MESSTER MATCHANIG D MESSTER MATCHANIS B METHER MATER NO C MESSTER MATKINS RIOGE B METHER MATOR MATSON C MHARTON MATSON B MHELCHE MATTON C MHEATEL MATTON C MHEATEL MATTON C MHEATEL MAUGUNDA B MHELCHE MAUGUNDA B MHILLOR MAUKEN A D MHILPAT MAUKEN A C MHILTE MAUGUNDA B MHILCHE MAUGUNDA B MHELCHE MAUGUNDA B MHELCHE MAUKEN A D MHILPAT MAUKEN A D MHILPAT MAUKEN A C MHILTE MAUGUNDA B MHILCHE MAUKEN A D MHILPAT MAUKEN A D MHILPAT MAUKEN A C MHILTE MAUGUNDA B MHILCHE MAUGUNDA B MHILTE MAUGUN	TH	WILL WILL WILL WILL WILL WILL WILL WILL	LEY LKÉS LKESON LKINS LL LLACY LLAKENZIE LLAMAR LLAMETTE LLAPA LLETTE LLHAND LLETTE LLHAND LLIAMSBURG LLIAMSCN LLIAMSCN LLITS LLIUUGHBY LLCW CREEK	C C C C C C C C C C C C C C C C C C C	MOODHURST WOODLYN WOUDMANSIE WODDMERE WCDO RIVER WOODS CROSS WOOD	A B C B C D C A D C C B B C C C	YOUMAN YOUNGSTCN YOURAME YOUNGME YOUNGME YSIDDRA YTURBIDE YUKGN YUNGS YUNGUE ZAAR ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C B A D C A D D C C B D C B D B
HAR WICK WASATCH WASTET WASHEURN WASTET WASHEURN WASTER WATCHANG WESTER WHELE WHATED WHATED WHATED WHATED WHATED WHATED WHEELD WHOBEY WAUKEN WHIDES WAUKEN WHIDES WAUKEN WHIDES WAUKEN WAUKEN WHIDES WAUKEN WHIDES WAUKEN WHIDES WAUKEN WHIDES WHITE WAUKER WHITE WHIT	B C B C C C C C C C C C C C C C C C C C	AIL WILL WILL WILL WILL WILL WILL WILL W	LKESGN LKINS LLACY LLAKENZIE LLAMAR LLAMETTE LLAPA LLARD LLETTE LLHAND LLIAMS LLIAMS LLIAMSSURG LLIAMSSN LLIAMSSN LLIAMSSN LLITS LLIUGHBY LLCW CREEK	C O O B B C C C A/D B B C C C B B B B C C C B B B B C C C C B B B B C C C B B B B C C C B B B B B C C C B B B B B B C C C B B B B B B B B C C C B B B B B B B B B B B B B B B B B B B B	WOODLYN WOUDMANSIE WODDMERE WCDO RIVER WCOGROCK WCUGROM WOODS CRCSS WOODSFIELD WOODSIDE WOODSTOCK WCODSTOCK WCODSTCK WCODSTCK WCODSTCK WCODSTCK WCODSTCK WCODSTCK WOODMARD WOODMARD WOODMARD WOOLPER WGGLSEY	C 3 B C B C D C A D C / O C B B C C C	YOURAME YOVIMPA YSIDDRA YTURBIDE YUKGN YUKGN YUNGUS ZACA ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	A D C A D D C C B D B
MASATCH MASEPIT MASEPIT MASHINGTON MASHINGTON MASHINGTON MASHOE C MESTERM MASHINGTON MASHINGTON MASHINGTON MASHINGTON MASHINGTON MASHINGTON MASHINGTON MASHINGTON MASITENAN C/F MESTERE MASHINGAL MASILIA C MESTERE MASILIA C MESTERE MASILIA C MESTERE MASILIA C MESTERE MASSILO MASSILO MASSILO MASSILO MASSILO MASSILO MASTALO MASTERANO MATERANO MARETE MAUGUNDA MAUCONDA MAUCON	C B OK D Y C EK B ILLE C L D D S S S S S S S S S S S S S S S S S	WILL WILL WILL WILL WILL WILL WILL WILL	LKINS LL LLACY LLAKENZIE LLAMAR LLAMETTE LLAPA LLETTE LLHAND LLETTE LLHAND LLIAMS BURG LLIAMS CN	O O B C C D B C C C A/D B C C C B B C C C B B C C C C C B C C C C C C C C C C C C C C C C C C C C	WOUDMANSIE WODDMERE WODD RIVER WOCOROCK WOUDSCON WOODS CROSS WOODSFIELD WOODSTOCK WOUDSTOCK WOODSTOCK WOOD	8 C B C C A D C C B B C C C	YOV IMPA YSTODRA YSTURBIDE YUBA YUKGN YUNGS YUNGUE ZACA ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	D C A O D C C B D B
HASEPI WASHURN WASHORN WASHOE WASHOE WASHOE WASHOE WASHOE WASHOE WASHOE WASHIDAL WASIEN WESTON WESTON WESTON WESTON WESTON WESTON WESTON WASIEN WATER WAUGUN WATER WAUGUN WHEELO WHEELO WAUCOMA WHELOO WAUCOMA WAUCOMA WHIPPAR WAUKER WAUKER WAUKER WAUKER WAUKER WHITER WAUKER WHITER WAUKER WAUKER WHITER WAUKER WAUKER WHITER	OK	WILL WILL WILL WILL WILL WILL WILL WILL	LL LLACY LLAKENZIE LLAMAR LLAMETTE LLAPA LLARTE LLETTE LLHAND LLIAMS LLIAMS LLIAMS LLIAMSCN LLIAMSCN LLIS LLITS LLUUGHBY LLCW CREEK	0 B C D B C C A/D B B C C C	WODDMERE WCDO RIVER WOCOROCK WOUGROW WOODS CRCSS WOODSTIELD WOODSIDE WOODSTOCK WOUDSTOCK WOODSTOWN WOODWARD WOODWARD WOODWARD WOOLPER WOOLSEY	B C B C D C A D C/D C B B C	YSIDORA YTURBIDE YUBA YUKGN YUNES YUNGUE ZAAR ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C A O O C C B D C B
WASHINGTON B WESTONE WASHOUGAL C WESTERN WASHIDAAN C/T WESTERN WASHIDAAN C/T WESTERN WASHIDAAN C/T WESTERN WASHIDAAN C WESTERN WASHIDAAN C WESTFOR WASSIC B WESTFOR WASSAIC B WESTERN WATAUGA C WESTFOR WATCHUNG C WESTFOR WAUCONA B WEELLOW WAUCONA B WHEELCH WAUCONA B WHICOBEY WAUCONA C WHITOBEY WAUCONA C WHITOBEY WAUCONA C WHITECA	Y C EK B EILLE C L C LD D D STER C/E E B	WILL WILL WILL WILL WILL WILL WILL WILL	LLAKENZIE LLAMAR LLAMETTE LLAPA LLETTE LLHAND LLIAMS LLIAMS LLIAMS LLIAMSCN LLIAMSCN LLIS LLITS LLIUGHBY LLCW CREEK	C D B C C B B B B C C B B B	WOCGROCK WOUDROW WOODS CRCSS WOODSFIELD WOODSIDE WOODSTOCK WOODSTOCK WCODSTCWN WOODSTOCK WCODSTCWN WOODWARD WOOLMAN WOOLMAN WOOLPER WOOLSEY	B C D C A D C/D C B B C	YUBA YUKGN YUNGS YUNGUE ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHLL ZAHL	0 D C D C B D
WASHOE WASHOUGAL WASHTENAN WASHTENAN WASHTENAN WASHII A WASIIA WASIIA WASIIA WASIIA WASIIA WASIIA WASIIA WASAIC WESTFAN WASIIA WATAUGA WESTLAN WASTLAN	EK B FILLE C L C L D D D STER C/E E B	WILL WILL WILL WILL WILL WILL WILL WILL	LLAMAR LLAMETTE LLAMA LLARD LLETTE LLHAND LLIAMS LLIAMSSURG LLIAMSSN LLIAMSSN LLITS LLITS LLUUGHBY LLCW CREEK	D B C C B B B B C C B B B B B C C B B B B B B B C C B B B B B B B C C B B B B B B B B B B B B B B B B B B B B	WEUGROM WOODS CRCSS WOODSTIELD WOODSIDE HOODSCON WOUDSTOCK WOODSTCWN WOODSTCWN WOODWARD WOOLMAN WOOLPER WOGLSEY	C D C A D C / D C B B C C C	YUKGN YUNGUE ZAAR ZACHARIAS ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	D C C B D B
HASHJUGAL HASHJUGAL HASHJUGAL HASHJUA	TILLE C L C LD D D STER C/E E B	WILL WILL WILL WILL WILL WILL WILL WILL	LLAPA LLARD LLETTE LLHAND LLIAMS LLIAMS SURG LLIAMS CN LLIAS LLITS LLITS LLGUGHBY LLGUGHBY LLGW CREEK	C C A/D B B C C B	WUCDSFIELD WUCDSIDE WUCDSICK WUCDSTCKN WUCDSTCWN WUCDSTCWN WUCDWARD WUCLMAN WUCLPER WUCLSEY	D C A D C / D C B B C C C	YUNQUE ZAAR ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C D C B D
WASILTA C WESTFIE WASINJA C WESTFAR WESTEAN WAILERSPRO WESTFAN WATERSPRO WESTFAN WATERS C WESTFAN WATERIND C WESTFAN WATERN C WHALAN WATSON C WHATTON WHATCOM WHATSON C WHATTON WHATSON C WHATTON WHATSON C WHATTON WHATSON C WHATTON C WHATTON WHATSON C WHATTON C WHATTON WHATSON C WHATTON WHATSON C WHATTON C WHEELIN WAUTTON C WHITPAN WHEELON WAUTTON C WHITPAN WHEELON WAUTTON C WHITPAN WHITPAN WAUTTON C WA	LD D D STER C/E E B	WILL WILL WILL WILL WILL WILL WILL WILL	LLARD LLETTE LLHAMD LLIAMS LLIAMS SURG LLIAMS CN LLIS LLIIS LLITS LLGUGHBY LLGW CREEK	C A/D B B C C C B B B	WOODSIDE WOODSCN WOUDSTOCK WCODSTCWN WOODWARD WOOLMAN WOOLPER WOOLSEY	A D C/O C B B C	ZAAR ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	D C B D
MASIAJA MASSAIC MASSAIC MASSAIC MASSAIC MATABB MESTHAN MATAUGA MATAUGA MATCHUNG MATCHUNG MATCHUNG MATERBORD MATSONIA MATSONIA MATSONIA MATON MATSONIA MATON MATSONIA MATON MATSONIA MATON MATSONIA MATON MATSONIA MATON	D 8/6 STER C/6 E 8	WILL O WILL O WILL	LLETTE LLHAND LLIAMS LLIAMSBURG LLIAMSCN LLIS LLITS LLUGURBY LLGUGRBY LLCW CREEK	A/D B B C C C B	WOODSCN WOODSTOCK WCODSTCWN WOODWARD WOOLMAN WOOLPER WOOLSEY	D C/O C B C C	ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C B D 8
HASSAIC B WESTLAN HATAGA B HESTMON WASTON WESTPMAN WASTSON C WHAATON WATSON C WHAATON WATSON C WHAATON WATSON C WHAATON WATSON C WHAATON C WHATEN WAUGHT WAUGHT WASTPMAN WASTPMAN WESTPMAN WAUKON WHITPAN WAUKON WAUKON WHITPAN WAUKON WAUKON WHITPAN WAUKON WHITPAN WAUKON WAUKON WHITPAN WAUKON WAUKON WHITPAN WAUKON WAUKON WHITPAN WAUKON WAUKON WAUKON WHITPAN WAUKON	D 8/6 STER C/E E 8	O WILL	LLHAND LLIAMS LLIAMSBURG LLIAMSCN LLIS LLITS LLUGUGHBY LLCW CREEK	8 8 8 C C 8	WOUDSTOCK WCODSTCWN WOODWARD WOOLMAN WOOLPER WOOLSEY	C/O C B C C	ZACA ZACHARIAS ZACHARY ZAFRA ZAHILL ZAHL	C B D 8
HATAIRA HATAIRA HATAIRA HATCHAIG HATCHAIN HAUCHOLA HACCHAIN HAUCHOLA HAUCHO	E B	#11 #11 #11 #11	LLIAMSBURG LLIAMSCN LLIS LLITS LLUUGHBY LLCW CREEK	B C C B	WOODWARD WOOLMAN WOOLPER WOOLSEY	В В С С	ZACHARY ZAFRA ZAHILL ZAHL	B D
HATCHANG B WESTON BETTEN WESTON BETTEN WESTON BETTEN WESTON BETTEN WESTON COMPATION WESTON WESTON WESTON BETTEN WESTON BETTEN WESTON COMPATION COMPATION COMPATION WESTON WESTON BETTEN WESTON COMPATION WESTON BETTEN BETTEN WESTON BETTEN BETT		#11 #11 #11 #11	LLIAMSON LLIS LLITS LLOUGHBY LLOW CREEK	C C B	WODLMAN WOOLPER WOOLSEY	B C C	ZAFRA Zahill Zahl	в
MATCHUNG MAIERBURY MATERBURY D MESTPHA MATERBURY D MESTPHA MATERS MATERIND C MESTPHA MATERS MATKINS MA	ELAND B	WIL WIL	LLITS LLUUGHBY LLCW CREEK	B B	WOOLSEY	C	ZAHL	B.
WATF-BURY D MESTPUR WATERIND C MESTPUR WATERS C MESTPUR WATNINS B METHERY WATOPA B METLEL WATRINS B METLEL WATSONIA C MHALAN WATSONIA C MHALAN WATSONIA C MHALAN WATSONILE D MHATCOM WATSONIA C MHAETEL WATT C MHEATEL WATT B MEELER WATUN B MEELER WAUGUNSIE B MEELER WAUGUNSIE B MEELER WAUGUNSIE B MHEELCH WAUCOMA B MHEELCH WAUKER B MHIPSTE WAUKER B MHIPSTE WAUKER B MHIPSTE WAUKER B MHIPSTE WAUKER C MHITTEL WANAWAA C MHITTEL	0	WIL	LLUUGHBY LLCW CREEK	В				
HATEXIND C WESTPOR HATEXS C WESTVIL HATKINS B WETHERS WATKINS RIDGE B WETHERS WATKINS B WETHERS WATKINS B WETHERS WATCOA B WETZEL HATRIUS B WETZEL HATRIUS C WHARIDM WATSON C WHARIDM WATSONIA O WHATCO WATSONIA O WHATCO WATSONIA C WHARIDM WATSONIA C WHARIDM WATSONIA C WHARIDM WATSONIA C WHEATRI WATT O WHEATRI WATT O WHEATRI WAUGUNSIE B WHEELEN HAUCHULA B/D WHEELO WAUCOMA B WHEELO WAUCOMA B WHEELO WAUCOMA B WHEELO WAUKEF W WHETSTI WAUKEFA D WHIPPAR WAUKENA D WHIPPAR WAUKENA D WHIPPAR WAUKENA D WHIPPSTE WAUKENA D WHIPPSTE WAUKENA D WHIPPSTE WAUKENA D WHIPPSTE WAUKENA C WHITE		WIL	LLCW CREEK				ZALESKI	B C
HATEKS C MESTVIL HATKINS B METHERS MATKINS RIDGE B METHEY WATOPA B METYEL HATRINS B METHEY WATOPA B METYEL HATRINS B METHEY WATSON C MHALAN WATSON C MHATION WATSONIA O MHATCON HATSONVILLE D MHATCON HATSONVILLE D MHATCON HATTON C MHEATIN HAUBEK B MHEELER HAUGONSIE B MEELER HAUGONSIE B MHEELER HAUGONA B MHEELER HAUGONA B MHEELER HAUGONA B MHEELER HAUKEF B MHEELST MAUKERA D MHIDPAR HAUKON B MHIDPAR HAUKON B MHIPPAT HAUMERA D MHIPPAT HAUMERA O MHIT HAUMERA C MHITEEA				В	WOOSTER	Č	ZALLA	Ā
WATKINS RIDGE 8 WETHEY WATOPA 8 WETZEL WATRIUS 8 KEYMCUT WATSON C WHALAN WATSON C WHATCO WATSONIA C WHATCO WATSONIA C WHATCO WATSONILE D WHATCO WATSONILE D WHATCO WATTON C WHEATE WATT C WHEATE WAUTON C WHEATE WAUGUNG 8 WHEELE WAUGUNG 9 WHISTON WAUKEN D WHIPPAR WAUKEN D WHIPPAR WAUKEN D WHIPPAR WAUKEN D WHIPPAR WAUKEN B WHIPPAR WAUKEN B WHIPPAR WAUKON S WHIPPAR WAUKON S WHIPPAR WAUKEN B WHIPPAR WAUKEN B WHIPPAR WAUKEN B WHIPPAR WAUKON S WHIPPAR				В	WOCSTERN	В	ZAMORA	В
MATOPA MATSON MATSON MATSONIA MATTON MHEATER MATTON C MHEATER MAUBAY MAUBEEK MAUGUNSIE MAUCHULA MAUCOMA MAU	FIELU C B/C		LLWCCD	D A	WOCTEN WORCESTER	A B	ZANE ZANEIS	C B
HATSEKA C WHALAN MATSON C WHATCOM WATSONIA O WHATCOM WATSONVILLE D WHATCOM WATSONVILLE D WHATCOM WATSON C WHEATLE WATTON C WHEATLE WAUGUNG WATSON C WHEATLE WAUGUNG WAUCOMA B WHEELIN WAUKENA D WHITOMA WAUKENA C	0		LMER	ĉ	WORF	Ď	ZANESVILLE	č
WATSON C WHARTON WATSONIA O WHATCOM WATSONIA O WHATCOM WATSONVILLE D WHATCOM WATSONVILLE D WHATCOM WATSONVILLE D WHATCOM WAUGHAR BY D WHEELT WAUGHOLA BY D WHEELT WAUGHOLA BY D WHEELCH WAUGONA B WHEELCH WAUGONA B WHEELCH WAUGONA B WHITOSEY WAUKEN A D WHIPSTO WAUKEN A D WHIPSTO WAUKEN B WHIPSTO WAUKEN B WHIRLO WALKAN B WHIRLO WANAWAY C WHITTER WAYCOP B WHITTER			LPAR	0	WORK	c	ZANONE	c
WATSONIA WATSONVILLE WATT WATT WATT WATT WATT WATT WATTON C WHEATER WAUBAY WAUBLEK WAUBUNSIF WAUCOMA WHEELOM WAUKER WAUKER WAUKER WAUKERA WHIDOM WAUKENA WHIDOM WAUKENA WAUKENA WAUKENA WHIPST WAUWERA WHIPST WAUWERLY WAUFELY WAUFELY WAUFELY WHITEGA W	8 C		LSCN LTSHIRE	D C	WCRLAND WORLEY	B C	ZAPATA ZAVALA	C B
HATT O HEATLE HATTON C HEATRE HATTON C HEATRE HAUBAY 8 HEATVI HAUBERK 8 HHEATVI HAUBERK 8 HHEATVI HAUBERK 8 HHEELDN HAUCHULA 8/D HEELOO HAUCOMA 8 HHEELON HAUCOMA 8 HHEELON HAUCOMA 8 HHEIDRAUKER A D HITOBEY HAUKENA C HITOBEY HAUKENA C HITOBEY HAUKENA C HITOBEY HAUKENA C HITOBEY HAUKENA D HITOBEY HAUKENA D HITOBEY HAUKENA C HITOBEY HAUKENA C C HITEEL HAUKENA C HITEEL HAUKENA C HITEE	C		NANS	B/C	WOR™SER	С	ZAVCO	С
HATTON C HHEATRI HAUBAY B WHEATRI HAUBAY B WHEELER B WHEELER WAUSUNSIE B WHEELON HAUCONDA D WHELCH WAUCONDA D WHEICH WAUKERA D WHIOBAY WAUKENA D WHIPPAR WAUKENA D WHITPAR WAUKENA D WHITTON HAUMBEK B WHIRLO WAUPIKA D WHITTON WAUPIKA D WHITTON WAUPIKA D WHITTON WAUPIKA C WHITECA WAYCUP B WHITECA WAYCUP			NCHESTER	A	WOROCK	В	ZEB	В
HAUBAY HAUBEK HAUGUNSIE HAUCHULA HAUCONDA HAUCOND HAUCON HAUC			NC ⊩UC K NOER	C B/D	WCRSHAM WORTH	D C	ZEESIX	C 6
WAUGUNSIE 8 WHEELIN WAUCHULA 8/D WHEELON 8 WHEELON WAUCONDA 9 WHELCON WAUKERA D WHIDPAN WAUKENA D WHIPPAN WAUKENA D WHIPPAN WAUKENA D WHIPST WAUKENA D WHIPST WAUKENA D WHIT WAUFELA D WHIT WAUFELA D WHIT WAUFELA D WHITCON WAYERLY 3/D WHITCON WAYERLY 3/D WHITCON WAYERLY B WHITECA WAYCUP 8 WHITECA	LLE B	h I f	NCMILL	В	WORTHEN	В	ZEN	С
MAUCHULA MAUCOMA MAUCOMA MAUCOMA MAUCOMA MAUKEE MAUKEGAN MAUKENA MAURENA MAURE			NDOM	В	WORTHING	D	ZENCA Zenia	C B
HAUCOMA B WHEELOM MAUCONDA B WHEELOM MAUKEGAN B WHIOSEY WAUKENA D WHIPPAN MAUKON S WHIPPAN MAUKON S WHIPPAN MAUKON B WHIRLO MAUPIKA D WHIT MAUSEON B/O WHIT MAUSEON B/O WHITAKE MAYCOP B WHITECA			NO RIVER NDSOR	B	WORTHINGTON WORT⊬AN	C C	ZENIFF	В
WAUKEF 8 WHETSTO WAUKEGAN 8 WHIDBEY WAUKENA D WHIPPAN WAUKEN 9 WHIPPAN WAUKEN 8 WHIRLO WHIT WAUSEON 5/0 WHITAKE WAYERLY 3/0 WHITCOM WAYERLY 3/0 WHITE CA WAYERLY B WAYCUP 8 WHITE CA	0		NETHORST	С	WRENTHAM	C	ZEGNA	A
MAUKEGAN & WHIDEN MAUKENA D WHIPPAN MAUKON S WHIPSTE MAUMBEK B WHIRLD WHITE MAUPIKA D WHITCH MAUERLY 3/D WHITCH MAYERLY 3/D WHITCH MAYANA C WHITE E MAYCUP B WHITECA			NDY NEG	C B	WRIGHT WRIGHTSVILLE	C 0	ZIEGLER ZIGWEID	G C
WAUKON	8		NEMA	c	WUNJEY	В	ZILLAH	B/C
HAUMBEK B WHIRLD WAUPIKA 0 WHIT WAUSEON 5/0 WHITAKE WAVERLY 3/0 WHITCO WA*AXA C WHITECA WAYCUP B WHITECA	Y C	WIP	NETTI	8	WURTSBURD	C	ZIM	D
WAUPIKA D WHITAKE WAUSEON 5/0 WHITAKE WAVERLY 3/0 WHITCOM WAWAXA C WHITE E WAYCUP B WHITECA	CK C	HIW HIW	NFIELD	C D	WYALUSING WYARO	0 B	ZIMMERMAN ZING	A C
WAYERLY S/O WHITCOM WAMAKA C WHITE E WAYCUP B WHITECA	8		NGATE	В	WYARNO	Č	ZINZER	В
WAWAKA C WHITE E		WIN	NGER	C	WYATT	C	ZION	C
WAYCUP B WHITECA			NGVILLE NIFRED	B/D C	WYEAST WYEVILLE	C C	ZIPP ZITA	C/D B
		hI4		В	WYGANT	В	ZOAR	Č
	IRD C	WIR	NKLEMAN	C	WYKOFF	В	ZOHNER	8/0
WAYLAND C/D WHITEFO WAYNE 8 WHITEHO	IRD C P O SH B		NLO NLCCK	0 C	WY#ORE	B C	ZOOK ZDRRAVISTA	C A
WAYNESBORD B WHITE H	IRD C P O SH B RD B	WIN		č	MANN	в	ZUFELT	B
WAYSIGE WHITELA	IRD C P O SH B RD B RSE B		NNEBAGC	8	WYNOCSE	D	ZUMBRO	В
WEA B WHITELA WEAVER C WHITEMA	IRD C P O SH B RD B RSE B OUSE C KE B		NNE MUCCA NNESHIEK	8 8	WYOCENA	B B	ZUMWALT ZUNDELL	C B
WEBB C WHITERO	IRD		NNETT	D	WIOCENA	Ü	ZUNHALL	В
WEBER B WHITESE	IRD C P O SH B RD B RSE B GUSE C KE B N D		NCNA	O	YACOLT	В	ZUNI	С
WEBSTER C WHITE S WEDGE A WHITE S	IRD C P 0 SH 8 RD B RSE B GOUSE C KE B N 9 CCK D URG C	hId	NUOSKI	B A	YAHARA Yahola	6 B	ZUR ICH	В
WEOUWEE B WHITEWA	IRD C P O Sh B RD B RSE B C KE B N D CK D URG C TORE C C TORE C C TORE C C C C C C C C C	HIW HIW	NSTON		YAKIMA	В		
WEED C WHITEWO	IRD C PP O SH B RD B RSE B GUSE C KE B N B N D CK D URG C TORE C WAM C	11 <i>4</i> 11 <i>W</i> 11 <i>W</i>	NSTON NTERS	c		0		
WEEDING A WHITLEY WEEDMAPK B WHITLOO	IRD C P O C S H B R C E E E E E E E E E	11 W 11 W 11 W 11 W	NTERS NTERSBURG	В	YAKUS			
WEEKSVILLE BYD WHITMAN	IRD C P 0 SH 8 RD 8 RSE 8 OUSE C KE 8 N 9 CCK D URG C TORE D WAN C TER 8	11 # 11 # 11 # 11 # 11 # 11 # 11 # 11	NTERS NTERSBURG NTERSET	B C	YALLANI	В		
NOTES A BL TWO	IRD C P O SH B RD B RSE B OUSE C KE B N 9 CK D URG C TORE C TORE C TORE B OO C K B B K B K B K B K B K B K B K B K B K	11 # 11 # 11 # 11 # 11 # 11 # 11 # 11	NTERS NTERSBURG	В		B B C		

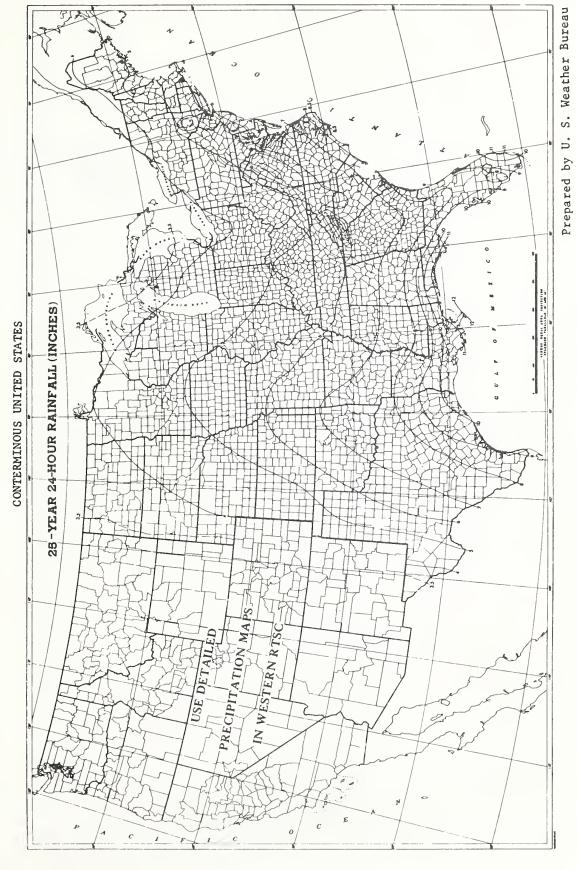
January 1971

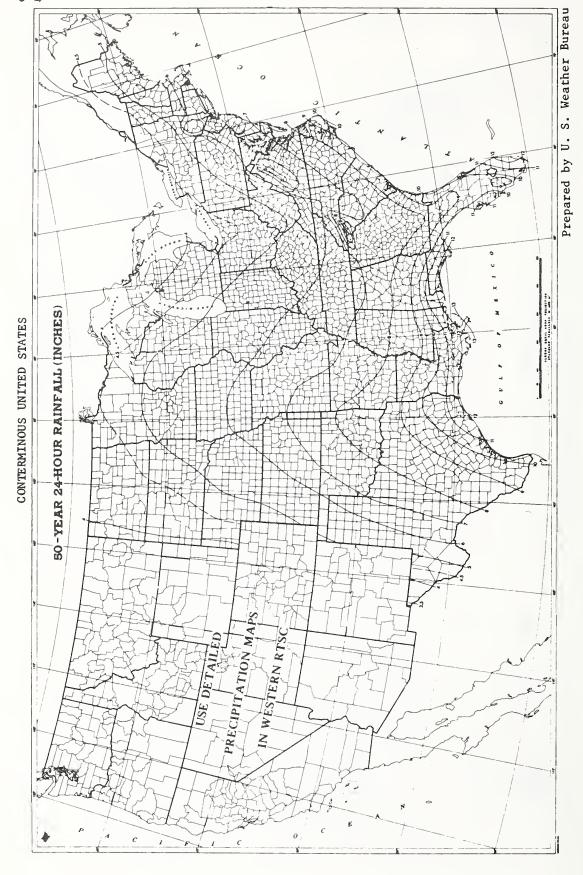
APPENDIX C

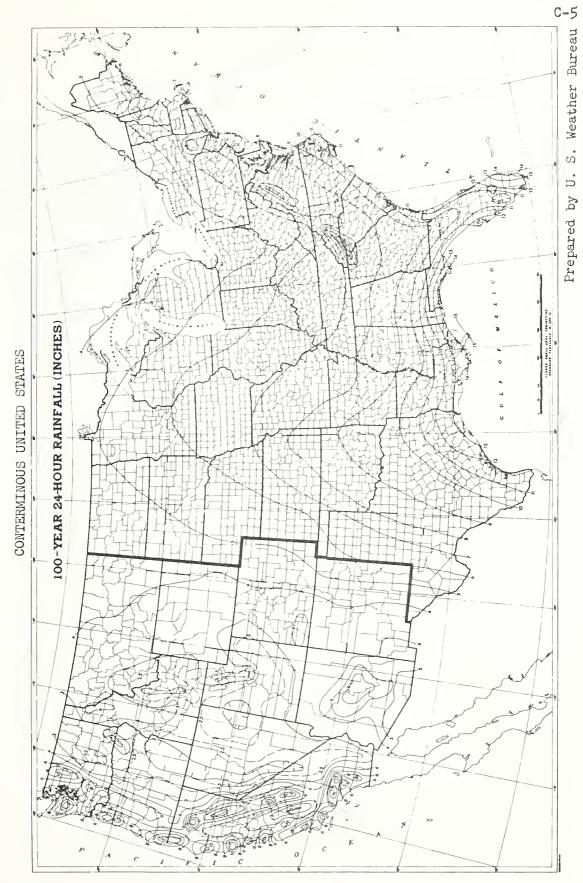
RAINFALL MAPS OF CONTERMINOUS UNITED STATES FOR 24-HOUR RAINFALL AMOUNTS

This appendix contains maps of the conterminous United States showing 24-hour rainfall amounts up to 100-year frequency for areas east of 105° longitude. For areas west of 105° longitude, use the detailed precipitation maps provided for each state. These may be obtained from the West Technical Service Center, SCS, Portland, Oreg.









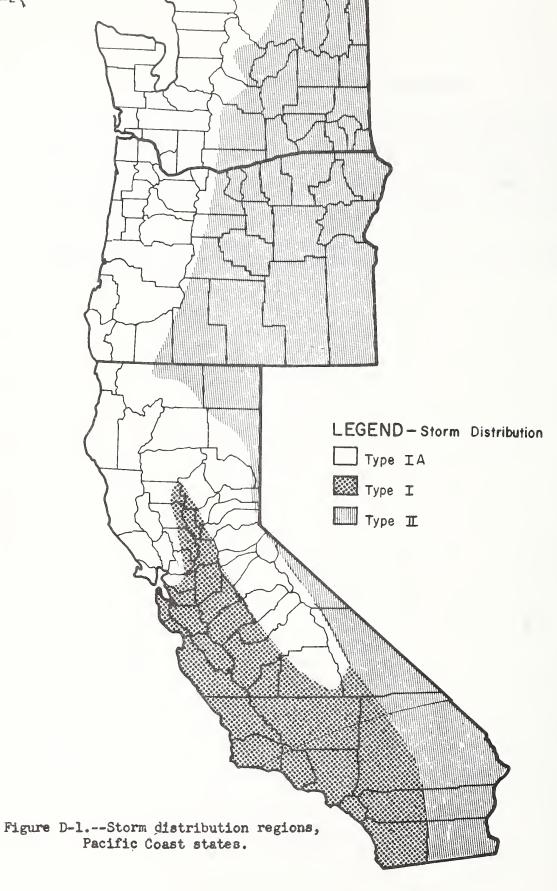


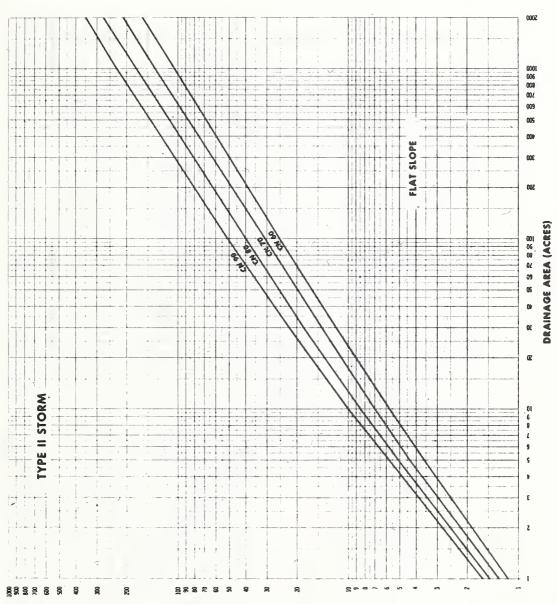
APPENDIX D

PEAK RATES OF DISCHARGE FOR SMALL WATERSHEDS

This appendix contains charts for estimating peak rates of runoff from small watersheds for use with procedures in chapter 4 of this technical release. They provide a basic peak discharge rate for a 24-hour duration storm associated with a watershed in a natural condition. To use these charts to determine peak rates of runoff in urban areas, the peaks must be modified for the amount of urbanization according to factors discussed in chapter 4 and for other factors discussed in appendix E.

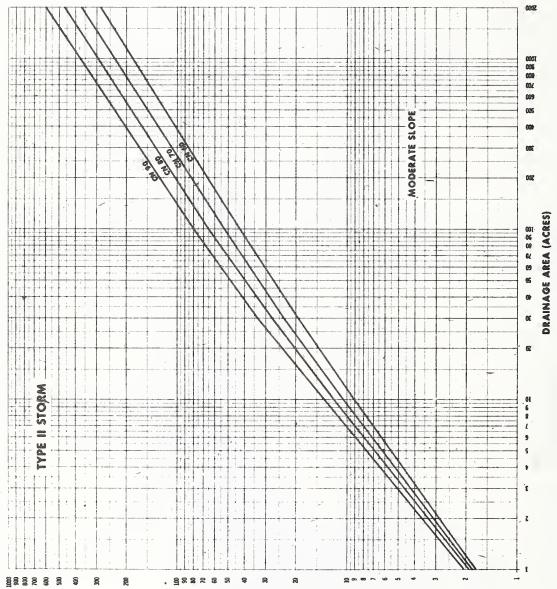
Figure D-1 shows the storm distribution regions for the Pacific Coast states. For all other states SCS uses only type-II storm distribution.





PEAK DISCHARGE (CFS/INCH OF RUNOFF)

Figure D-2.--Peak rates of discharge for small watersheds (24-hour, type-II storm distribution). Sheet 1 of 3



PEAK DISCHARGE (CFS/INCH OF RUNOFF)

Figure D-2.--Peak rates of discherge for small watersheds (24-hour, type-II storm distribution). Sheet 2 of 3 type-II storm distribution).

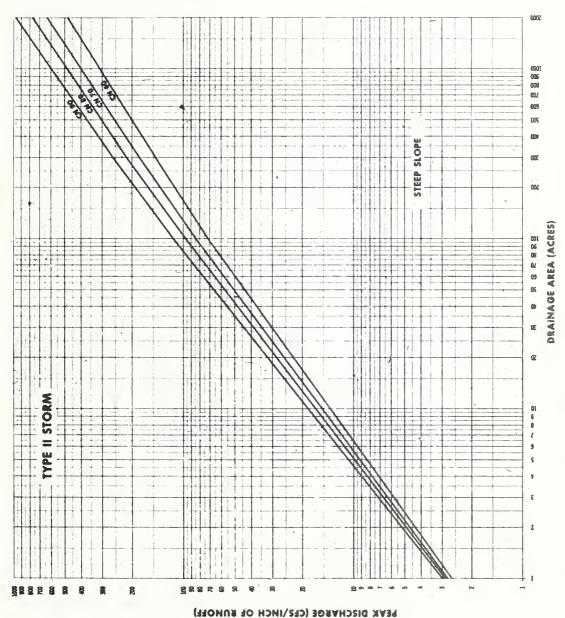


Figure D-2. -- Peak rates of discharge for small watersheds (24-hour, Sheet 3 of type-II storm distribution).



APPENDIX E

ADJUSTMENT FACTORS FOR PEAKS DETERMINED USING CHARTS IN APPENDIX D

Introduction

This appendix describes methods for adjusting peak rates of discharge for ranges of flat, moderate, and steep slopes; for conditions where swamps or ponding areas exist; and for conditions where the watershed shape factor (ℓ/w) varies significantly from that used in the development of appendix D charts.

Slope Interpolation

Table E-1 provides interpolation factors to be used in determining peak rates of discharge for specific slopes within ranges of flat, moderate, and steep slopes for a range of drainage areas. Appendix D charts for FLAT slope are based on 1-percent slope, for MODERATE slope on 4-percent slope, and for STEEP slope on 16-percent slope. For slopes other than 1, 4, and 16 percent, use the factors shown in table E-1 to modify the peak discharges.

Example E-1

Compute the peak discharge for a 1,000-acre watershed with an average watershed slope of 7 percent and a runoff curve number (CN) of 80 for 4 inches of rainfall.

- 1. Determine the peak discharge for a watershed with a moderate slope (4 percent). From appendix D, read a peak discharge of 295 cfs per inch of runoff for 1,000 acres and a CN of 80. From table 2-1, find 2.04 inches of runoff for 4 inches of rainfall and a CN of 80. The peak discharge is then 295 x 2.04 or 602 cfs (cubic feet per second).
- 2. Determine the interpolation factor. From table E-1 find 7-percent slope under MODERATE heading and read an interpolation factor of 1.23 for a drainage area of 1,000 acres. (The peak from a 1,000-acre watershed with a watershed slope of 7 percent is 1.23 times greater than for an average watershed slope of 4 percent.)
- 3. Determine the peak discharge for 7-percent slope.

$$q = (602)(1.23) = 740 \text{ cfs}$$

Example E-2

Compute the peak discharge for a 15-acre watershed with an average slope of 0.5 percent and a runoff curve number of 80 for 4 inches of rainfall.

1. Determine the peak discharge for a watershed with a flat slope (1 percent). From appendix D read a peak discharge of 11.2 cfs per inch of runoff for 15 acres and a CN of 80. From table 2-1, find 2.04 inches of runoff for 4 inches of rainfall and a CN of 80. The peak discharge is then 11.2 x 2.04 or 23 cfs.

Table E-1.--Slope adjustment factors by drainage areas

FLAT SLOPES									
Slope (per- cent)	10 acres	20 acres	50 acres	100 acres	200 acres	500 acres	1,000 acres	2,000 acres	
0.1 0.2 0.3 0.4 0.5 0.7 1.0 1.5 2.0	0.49 .61 .69 .76 .82 .90 1.00 1.13	0.47 .59 .67 .74 .80 .89 1.00 1.14	0.44 .56 .65 .72 .78 .88 1.00 1.14 1.26	0.43 .55 .64 .71 .77 .87 1.00 1.15	0.42 .54 .63 .70 .77 .87 1.00 1.16 1.29	0.41 .53 .62 .69 .76 .87 1.00 1.17	0.41 .53 .62 .69 .76 .87 1.00 1.17	0.40 .52 .61 .69 .76 .87 1.00 1.17	
			MODER	ATE SLOP	ES				
3 4 5 6 7	.93 1.00 1.04. 1.07 1.09	.92 1.00 1.05 1.10 1.13	.91 1.00 1.07 1.12 1.18	.90 1.00 1.08 1.14 1.21	.90 1.00 1.08 1.15 1.22	.90 1.00 1.08 1.16 1.23	.89 1.00 1.09 1.17 1.23	.89 1.00 1.09 1.17 1.24	
			STE	EP SLOPES	5	· · · · · · · · · · · · · · · · · · ·			
8 9 10 11 12 13 14 15 16 20 25 30 40 50	.92 .94 .96 .97 .97 .98 .99 1.00 1.03 1.06 1.09 1.12	.88 .90 .92 .94 .95 .97 .98 .99 1.00 1.04 1.08 1.11 1.16 1.21	.84 .86 .88 .91 .93 .95 .97 .99 1.00 1.05 1.12 1.14 1.20	.81 .84 .87 .90 .92 .94 .96 .98 1.00 1.06 1.14 1.17 1.24 1.29	.80 .83 .86 .89 .91 .94 .96 .98 1.00 1.07 1.15 1.20 1.29 1.34	.78 .82 .85 .88 .90 .93 .96 .98 1.00 1.08 1.16 1.22 1.31	.78 .81 .84 .87 .90 .93 .95 .98 1.00 1.09 1.17 1.23 1.33	.77 .81 .84 .87 .90 .92 .95 .98 1.00 1.10 1.19 1.24 1.35 1.43	

- 2. Determine the interpolation factor. From table E-1 find 0.5-percent slope under FLAT heading. Read a slope interpolation factor of 0.81 interpolated between the values for 10 acres and 20 acres.
- 3. Determine the peak discharge for 0.5-percent slope.

$$q = (23)(.81) = 19 \text{ cfs}$$

Adjustment Factors for Swampy and Ponding Areas

Peak flows determined from appendix D assume that the topography is such that surface flow into ditches, drains, and streams is approximately uniform. On very flat areas and where ponding or swampy areas occur in the watershed, a considerable amount of the surface runoff may be retained in temporary storage. The peak rate of runoff should be reduced to reflect this condition. Tables E-2, E-3, and E-4 provide adjustment factors to determine this reduction based on the ratio of the ponding or swampy area to the total watershed area for a range of storm frequencies.

Table E-2 contains adjustment factors to be used when the ponding or swampy areas are located in the path of flow in the vicinity of the design point. Table E-3 contains adjustment factors to be used when a significant amount of the flow from the total watershed passes through ponding or swampy areas and these areas are spread throughout the watershed. Table E-4 contains adjustment factors to be used when a significant amount of the flow passes through ponding or swampy areas that are located only in the upper reaches of the watershed.

Table E-2.--Adjustment factors where ponding and swampy areas occur at the design point

Ratio of drainage	Percentage of		Storm frequency (years)				
area to ponding and swampy area	ponding and swampy area	2	5	10	25	50	100
500	0.2	0.92	0.94	0.95	0.96	0.97	0.98
200	.5	.86	.87	.88	.90	.92	. 93
100	1.0	.80	.81	.83	.85	.87	.89
50	2.0	.74	.75	.76	.79	.82	.86
40	2.5	.69	.70	.72	.75	.78	.82
30	3.3	. 64	.65	.67	.71	.75	.78
20	5.0	.59	.61	.63	.67	.71	.75
15	6.7	.57	.58	.60	. 64	. 67	.71
10	10.0	.53	.54	.56	.60	.63	. 68
5	20.0	.48	.49	.51	.55	.59	.64

Table E-3.--Adjustment factors where ponding and swampy areas are spread throughout the watershed or occur in central parts of the watershed

Ratio of drainage area to ponding	Percentage of ponding and		Stor	m freq	uency	(years)
and swampy area	swampy area	2	5	10	25	50	100
500	0.2	0.94	0.95	0.96	0.97	0.98	0.99
200	.5	.88	.89	.90	.91	.92	. 94
100	1.0	.83	.84	.86	.87	.88	.90
50	2.0	.78	.79	.81	.83	.85	.87
40	2.5	.73	.74	.76	.78	.81	.84
30	3.3	.69	.7 0	.71	.74	.77	.81
20	5.0	.65	.66	.68	.72	.75	.78
15	6.7	.62	.63	.65	.69	.72	.75
10	10.0	.58	.59	.61	.65	.68	.71
5	20.0	.53	.54	.56	.60	.63	.68
4	25.0	.50	.51	.53	.57	.61	.66

Table E-4.--Adjustment factors where ponding and swampy areas are located only in upper reaches of the watershed

Ratio of drainage area to ponding and swampy area	Percentage of ponding and swampy area	2	Stor 5	m freq	uency 25	(years 50	100
500	0.2	0.96	0.97	0.98	0.98	0.99	0.99
200	.5	.93	.94	.94	.95	.96	.97
100	1.0	.90	.91	.92	.93	.94	.95
50	2.0	.87	.88	.88	.90	.91	.93
40	2.5	.85	.85	.86	.88	.89	.91
30	3.3	.82	.83	.84	.86	.88	.89
20	5.0	.80	.81	.82	. 84	.86	.88
15	6.7	.78	.79	.80	.82	.84	.86
10	10.0	.77	.77	.78	.80	.82	.84
5	20.0	.74	.75	.76	.78	.80	.82

These conditions may occur in a proposed or existing urban or suburban area and the adjustment factors from tables E-2, E-3, or E-4 should be applied after the peaks have been adjusted for the effects of urbanization as described in chapter 4.

Example E-3

A 5-acre pond is located at the downstream end of a 100-acre watershed in which a housing development is proposed. The average watershed slope is 4 percent and the present-condition curve number is 75. After the installation of the housing development, 30 percent of the watershed will be impervious and 50 percent of the hydraulic length will be modified. The future-condition curve number is estimated to be 80. For a rainfall

of 6 inches (100-year frequency event) determine the present-condition and future-condition peak discharges downstream of the pond.

- 1. Determine the present-condition peak discharge assuming the pond is not in place. From appendix D, find the peak discharge to be 59 cfs per inch of runoff. From table 2-1, find the runoff to be 3.28 inches. The peak discharge is then 59 x 3.28 or 194 cfs.
- 2. Determine the ponding adjustment factor. Since the pond is at the lower end of the watershed, use table E-2. The ratio of the drainage area to pond area is 100/5 or 20. For a 100-year frequency event the adjustment factor is 0.75.
- 3. Compute the present-condition peak discharge.

$$q = 0.75(194) = 146 \text{ cfs}$$

- 4. Compute the basic future-condition peak discharge. From appendix D, find the peak discharge to be 65 cfs per inch of runoff. From table 2-1, find the runoff to be 3.78 inches. The peak discharge is then 65 x 3.78 or 246 cfs.
- 5. Determine the modification factors for proposed urbanization. From chapter 4 and figures 4-1 and 4-2 for a curve number of 80: impervious factor = 1.16; hydraulic length factor = 1.31; urbanization factor = (1.16)(1.31) = 1.52.
- 6. Compute the future-condition peak discharge.

$$q = 1.52(246) = 374 \text{ cfs}$$

7. Compute the future-condition peak below the pond. From step 2 the ponding factor is 0.75.

$$q = 0.75(374) = 280 \text{ cfs}$$

Adjustment for Watershed Shape Factor

The equation used in computing peak discharges from appendix D was based in part on a relationship between the hydraulic length and the watershed area from Agricultural Research Service's small experimental watersheds. Figure E-1 shows the best fit line relating length to drainage area. The equation of the line is $\ell = 209a^{0.6}$. A watershed shape factor, ℓ/w (where w is the average width of the watershed), is then fixed for any given drainage area. For example, for drainage areas of 10, 100, and 1,000 acres the watershed shape factor is 1.58, 2.51, and 3.98, respectively.

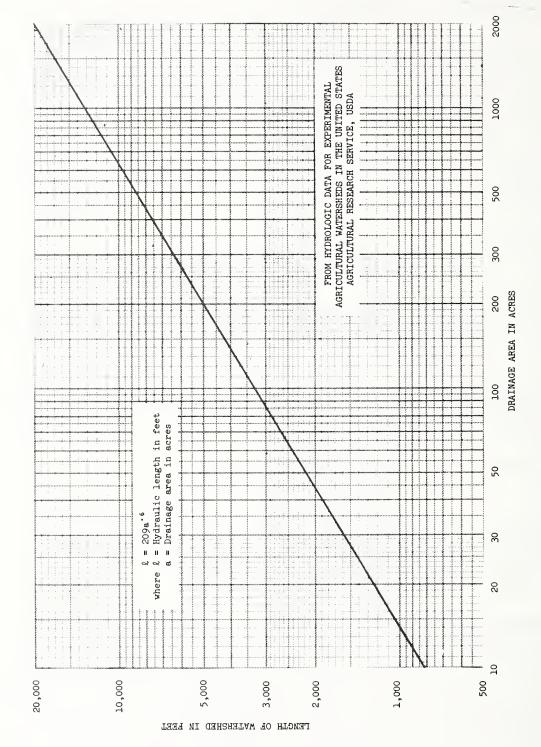


Figure E-1. -- Hydraulic length and drainage area relationship.

There are watersheds that deviate considerably from these relationships. The peaks can be modified for other shape factors. The procedure is as follows:

- 1. Determine the hydraulic length of the watershed and compute an "equivalent" drainage area using $\ell = 209a^{0.6}$ or figure E-1.
- 2. Determine the "equivalent" peak flow from the charts for the "equivalent" drainage area.
- 3. Compute the "actual" peak discharge for the watershed by multiplying the equivalent peak discharge by the ratio of actual drainage area to the equivalent drainage area.

The factors for modifying the peak for urbanization following procedures in chapter 4 can then be applied to the revised peak discharge.

Example E-4

From a topographic map the hydraulic length of a 100-acre watershed with moderate slopes and a CN of 75 was measured to be 2,200 feet. Determine the peak discharge for a 6-inch 24-hour rainfall.

- 1. Determine the "equivalent" drainage area for a watershed with a hydraulic length of 2,200 feet. From figure E-1 read 51 acres. (Note that for a 100-acre watershed the hydraulic length would be 3,300 feet from figure E-1.)
- 2. Determine the "equivalent" peak flow from appendix D for a drainage area of 51 acres and a CN of 75. Read 37 cfs per inch of runoff. From table 2-1, find the runoff to be 3.28 inches. The peak discharge is then 37 x 3.28 or 121 cfs.
- 3. Compute the actual peak discharge for 100 acres.

 $\begin{array}{l} \text{actual} \\ \text{discharge} \end{array} = \text{equivalent discharge} \ \left(\frac{\text{actual drainage area}}{\text{equivalent drainage area}} \right) \end{array}$

$$q = 121 \left(\frac{100}{51}\right) = 237 \text{ cfs}$$

The peak discharge for the 100-acre watershed with a hydraulic length of 2,200 feet is 237 cfs (versus 194 cfs for a "normal" 100-acre watershed). Adjustments to this peak discharge for urbanization can be made using factors discussed in chapter 4.

4. The procedure in steps 1, 2, and 3 can be used to determine peak discharges when the actual hydraulic length is longer than that shown on figure E-1. For example, if the actual length were 4,500 feet instead of 3,300 feet, the equivalent area would be 170 acres, as shown in figure E-1.



APPENDIX F

SAMPLE PEAK DISCHARGE WORKSHEETS

Introduction

Peak discharge worksheets have been developed to provide guidance in the use of TR-55 procedures. The worksheets contain examples that illustrate the use of several TR-55 techniques.

Procedure: Chapter 4 (appendices D & E)

The primary procedure, using chapter 4 with appendices D and E, is illustrated by an example on page F-3. This procedure uses a fixed watershed shape relation (figure E-1) and a fixed lag curve number (CN) relation (figure 3-3). The peak discharge per inch of runoff is read from one of the charts in Figure D-2 using a watershed slope range, drainage area, and CN. Appendix E and urban adjustments may be applied to the chart value, if appropriate.

One of the adjustments, the watershed shape factor, is applied on the worksheet as a muliplication factor and requires a second reading of the Figure D-2 chart. This is a similar but easier to apply procedure than example E-4 in appendix E.

Procedure: Tabular Method (chapter 5)

The Graphical (T_c) - Peak Discharge Worksheet, page F-5, illustrates the procedure using figure 5-2 with a computed time of concentration (T_c). The worksheet example uses the same input as the previous example, but shows a T_c computed by the Lag-CN method. The comparison of peak discharge at the bottom of page F-5 (1% difference between procedures) is meant to show how these procedures are related when a Lag-CN T_c is used. If the T_c is estimated more accurately by some method other than Lag-CN, the Graphical (T_c) procedure should be used. If you do not wish to calculate a T_c or information to develop a T_c is not available, the primary chapter 4 (appendices D and E) procedure is recommended.

(TR Notice 55-A, September 1981)

Procedure: Tabular Method (chapter 5)

The Tabular Method, a manual procedure to determine peak discharges for complex watersheds, is contained in Chapter 5. Tables 5-1 and 5-2 are samples of how a worksheet can be set up for this procedure.

Use of Worksheets

The slope range (flat, moderate or steep) used in appendices D and E is the average watershed (land) slope. This is not a channel slope. The base slope for each range is given on page E-l and the factors for interpolation when using other than the base slope is in table E-l.

The worksheets in this appendix give guidance as to which adjustments are required and which, when applicable, are recommended for each procedure. However, some of those recommended may be required modifications in some regions. If not used on the worksheet, a factor of 1.0 is used in the multiplication.

Do not use the ponding and swampy adjustment factor for the design point (table E-2) if the approximate routing procedures in chapter 7 (figures 7-1 or 7-2) are to be used at the design point. This will double count the storage.

A present urban condition is used in the worksheet examples to show how the urban adjustments can be used to estimate peak discharges from watersheds with existing urban areas. The references to future curve numbers in relation to figures 3-4, 3-5 and figures 4-1, 4-2, will be removed in the next revision of TR-55.

Blank worksheets, pages F-7 and F-9 are included.

Pı	oject AN	Y CREEK @ US RT. 242	By	TR_	Date	9/25	9/8/
	НО	WARD COUNTY, SOME STATE	Checked	MAM	Date	9/3	0/81
St		scharge Computations for up to 3 Storms:				,	, ,
1.	Data: Wate	ershed Condition = Present		(p	resent	or fut	ure).
		Area (DA) = 200 acres. Ave.					
2.	Runoff Curv	ve Number (CN)					
	Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or (4c)	es)	Produ (3)x (5)	(4)
	С	Cultivated w/o Conservation Treatment	98	12	0	105	60
	С	Industrial Area	91	5	s	45	50
	С	Residential - 1/8 Ac	90	18	3	162	20
	С	Paved Parking Areas	98	12	-	117	6
	Alexandria Cardington						
L			Totals =	20	0	1790	6
Cì	(weighted)	= total col. (5) [17906] =	89.53;	use C	N =	90)
3.	Rainfall Fr	requency (F)		d Storm		Storm	yrs.
	Rainfall De	enth (P)		5.0		.5	inches
		L		<u> </u>			
4.	Runoff Dept Use P, Ch	th (Q) N, and Table 2-1.	2.92	3.88	5.	34	inches
5.		Discharge (q)	<u> </u>	× 80		cfs/1	nch of G
	For graph labeled:	A, CN, and Figure D-2. A) Stat (S = less than 3%) Moderate (S = 3% to 7.9%) Steep (S = 8% & greater)		<u> </u>)	,
*6.	Watershed S	Slope Factor A, and Table E-1.		.29			
7.		arge (q _p) = Steps #4 x 5 x 6	301 2	= 400	55		cfs

TR-55, CHAPTER 4 (APPENDICES D & E), PEAK DISCHARGE WORKSHEET (CONT.)

Steps Peak Discharge Computations with Adjustments

8. Data: Obtain if Adjustments are Applicable

Ponding and Swampy areas (PND) = $\frac{4}{60}$ acres, $\frac{2}{30}$ % of DA Impervious Area (IMP) = $\frac{60}{60}$ acres, $\frac{30}{30}$ % of DA Total Hydraulic Length (HL) = $\frac{7600}{600}$ feet
Hydraulic Length Modified (HLM) = $\frac{3800}{600}$ feet, $\frac{50}{300}$ % of HL

Rainfall Frequency (F) from Step 3

1st Storm	2nd Storm	3rd Storm
10 yr	25 yr	100 YR

400

301

yrs.

cfs

55/

Peak Discharge (q_n) from Step 7

* 9。	Ponding and Swampy Area Peak Factor
	Use % PND, F, and Tables E-2, 3 or 4.
	Location in at Design Point (E-2)
	Watershed: E-3 Center or Spreadout (E-3
	(check one) Dpper Reaches (E-4)

*10. Watershed Shape Peak Factor
Use HL with Figure E-1 and read;

Equiv. Drainage Area (EDA) = 400 acres.

Use Figure D-2 graph from Step 5, CN, and EDA for; Equiv. Peak/Inch Runoff $(q_o) = 125$ cfs/in.

Factor =
$$\begin{bmatrix} \frac{q_e}{q \text{ from Step 5}} \end{bmatrix} \times \begin{bmatrix} \frac{DA}{EDA} \end{bmatrix}$$
Factor =
$$\begin{bmatrix} \frac{125 \text{ c/s/in}}{80 \text{ c/s/in}} \end{bmatrix} \times \begin{bmatrix} \frac{200 \text{ Ac}}{400 \text{ Ac}} \end{bmatrix} =$$

*11. Impervious Area Peak Factor
Use % IMP, CN and Figure 4-1.

*12. Hydraulic Length Modified Peak Factor
Use % HLM, CN and Figure 4-2.

13. Adjusted Peak Discharge (q_p) $q_p = q_p \text{ (from Step 7) x Steps #9 x 10 x 11 x 12}$

	L ^	1	, A	1
	.81	.83	.87	
	! !	1 i	1	1
) !	<u> </u> 	!
	i 	i I		1
3.				!
	! -			
4	for;			i 1
		X	 	! !
ĺ		<u> </u>		!
i		0.78		!
!	! !	Х		
- 1		1.09		1
		Х		:
ļ		1.17		
1		=		
	243	330	477	cfs
	12			

^{*} If the adjustment is not applicable, enter a Factor of 1.0

URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55) PEAK DISCHARGE WORKSHEET FOR GRAPHICAL (T_C) METHOD (FIGURE 5-2)

Pro	oject ANY CREEK @ US Rt 242	Ву	<u> </u>	ate <u>9/29/8</u>	<u> </u>
	HOWARD COUNTY, SOME ST	ATE Checke	d whom D	ate <u>9/30/8</u>	<u>,</u>
Ste				,	
1.	Data: Watershed Condition = Prese				
	Drainage Area (DA) = 200 acres.				
	Ponding and Swampy areas (PND) = $\frac{4}{}$				^*•
	Impervious Area (IMP) = 60				
	Total Hydraulic Length (HL) = 760				
	Hydraulic Length Modified (HLM) = 380	O feet, _	50 %	of HL	
			-	·	,
•		1st Storm	2nd Storm	3rd Storm	
2.	Rainfall Frequency (F)	10 yr	25yR	100 yr	yrs.
3.	Rainfall Depth (P)	4.0	5.0	6.5	inches
				J	Inches
4.	Runoff Curve Number (CN) = 90 See other side for computation				
5.	Runoff Depth (Q) Use P, CN, and Table 2-1.	2.92	3,88	5,34	inches
6	Time of Concentration $(T_0) = 0.94$ hrs.				† †
0.	See other side) Velocity Method	1 1 1			
	for computations Lag-CN Method (check one) Cther		х		
7.	Unit Peak Discharge (q) Use T and Figure 5-2		335	csm/incl	of Q
	c and rigare y		Х		
8.	Drainage Area [DA(acres)] [200]=			 	
	$\frac{\text{Drainage Area}}{640(\text{ac/sm})} = \frac{2.00}{640}$		0.31	sq. mile	3
40			Х		
×9.	Ponding and Swampy Area Peak Factor Only use % PND, F and Table E-3;	.81	.83	.87	
	when PND is spreadout in watershed and not related to T flow path.		=		
10.	Peak Discharge Area Factor where q = Steps #5 x 7 x 8 x 9	246	334	482	cfs
	Peak comparison	246/243	334/330	482/477	Graphical
	the adjustment is not applicable,				(Te)
ent	er a Factor of 1.0.	(Differen	ce in Metho	ads = 1%	Poge F.4

TR-55 GRAPHICAL (T_) METHOD, PEAK DISCHARGE WORKSHEET (CONT.)

Steps from other side

4. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% 67 Area (acres) (4)	Product (3)x(4) (5)
С	Cultivated W/o Conservation Treatment	88	120	10560
С	Industrial Area	91	50	4550
С	Residential - 1/8 Ac	90	18	1620
C	Paved Parking Areas	98	12	1176
		Totals =	200	17906

CN (weighted) =
$$\frac{\text{total col. 5}}{\text{total col. 4}} \left[\frac{17906}{200} \right] = \frac{89.53}{3}$$
; use CN = $\frac{90}{3}$

- 5. Time of Concentration (T) Select computation method, (a) is recommended.
 - (a) Velocity Method

Reach	Description of Flow $\frac{1}{}$	Length (ft.) (3)	Velocity (ft/sec) (4)	Travel Time (sec.) (3) - (4)

 $\frac{1}{2}$ Use Figure 3.1 for overland flow portion of travel time.

Totals = sec.

hrs.

$$T_c = \frac{\text{Total Travel Time (sec.)}}{3,600 \text{ (sec./hr.)}} = \begin{bmatrix} 3,600 \end{bmatrix} = \begin{bmatrix} 3,600 \end{bmatrix}$$

(b) Lag-CN Method

(1) Unadjusted Lag (L)
Use HL, S, CN, and Figure 3-3.
(7600, 2%, 90)

*(2) Hydraulic Length Modified Lag Factor
Use % HLM, CN, and Figure 3-4.
(50%, 90)

*(3) Impervious Area Lag Factor
Use % IMP, CN, and Figure 3-5.
(30%, 90)

(4) Constant ($T_c = 1.67L$)

(5) Time of Concentration (T_c)
where $T_c = (1)x(2)x(3)x(4)$

0.80 x 0.80 x 0.88

0.94 h

1.67

hrs.

Project	Ву	Date	
	Checked _	Date	
Steps Peak Discharge Computations for up to 3 Storms:	Type <u>II</u> ,	Duration _	24 hours.
1. <u>Data</u> : Watershed Condition =		(present	or future).
Drainage Area (DA) = acres. Ave.	Watershed Slo	pe (S) =	%.
2. Runoff Curve Number (CN)			
Hydrologic Soil Group (Appendix B) Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or Area (acres) (4)	Product (3)x(4) (5)
		_	
	1	4	
	Totals =		
CN (weighted) = $\frac{\text{total col.}(5)}{\text{total col.}(4)}$ =	;	use CN =	
3. Rainfall Frequency (F)	t Storm 2nd	Storm 3rd	Storm
Rainfall Depth (P)			yrs.
Maintail Depth (1)			inches
4. Runoff Depth (Q)			inches
Use P, CN, and Table 2-1. 5. Basic Peak Discharge (g)		x	7
5. Basic Peak Discharge (q) Use S, DA, CN, and Figure D-2. For graph Flat (S = less than 3%) Moderate (S = 3% to 7.9%)		i i	cfs/inch of
(check one) Steep (S = 8% & greater)		x	1
6. Watershed Slope Factor Use S, DA, and Table E-1.		= !	
7. Peak Discharge (qp)			cī s
where $q_p = Steps \#4 \times 5 \times 6$			GI S

TR-55, CHAPTER 4 (APPENDICES D & E), PEAK DISCHARGE WORKSHEET (CONT.)

Ste					
8.	Data: Obtain if Adjustments are Applicable		% - 5 D		
	Ponding and Swampy areas (PND) =a				
	Impervious Area (IMP) =a		% of DA	1	
	Total Hydraulic Length (HL) =f				
	Hydraulic Length Modified (HLM) =f	eet,	% of HI		
		1st Storm	2nd Storm	3rd Storm	
	Rainfall Frequency (F) from Step 3				yrs
	Peak Discharge (q _p) from Step 7				cfs
	P	X	X	X	1
*9.	Ponding and Swampy Area Peak Factor Use % PND, F, and Tables E-2, 3 or 4.				
	Location in Watershed: Center or Spreadout (E-3) (check one) Upper Reaches (E-4)				1
*10.	Watershed Shape Peak Factor Use HL with Figure E-1 and read; Equiv. Drainage Area (EDA) =acres				
	Use Figure D-2 graph from Step 5, CN, and EDA Equiv. Peak/Inch Runoff (q _e) = cfs/in.	for;		 	
	Factor =	i	X		
	Factor = x =		X		
*11.	Impervious Area Peak Factor		1 X		1
	Use % IMP, CN and Figure 4-1.		X		1
*12.	Hydraulic Length Modified Peak Factor Use % HLM, CN and Figure 4-2.				
	,	1	=		1
13.	Adjusted Peak Discharge (qp)				cfs
	$q_p = q_p \text{ (from Step 7) x Steps #9 x 10 x 11 x}$	12			

 $[\]ensuremath{^{\star}}$ If the adjustment is not applicable, enter a Factor of 1.0

URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55) PEAK DISCHARGE WORKSHEET FOR GRAPHICAL ($T_{\rm C}$) METHOD (FIGURE 5-2)

Project	Ву	D.	ate	_
	Checke	d D.	ate	
Steps Peak Discharge Computation for up to	3 storms: Type	e <u>II</u> , Dura	tion 24 ho	urs.
1, <u>Data</u> : Watershed Condition =		(pre	sent or futu	re).
Drainage Area (DA) = acres.	Ave. Watersh	ed Slope (S)	=	%.
Ponding and Swampy areas (PND) =				
Impervious Area (IMP) =	acres, _	%	of DA	
Total Hydraulic Length (HL) =	feet			
Hydraulic Length Modified (HLM) =	feet, _	%	of HL	
	1st Storm	2nd Storm	2m1 Charm	1
2. Rainfall Frequency (F)	ISC SCOTI	ZHA SLOPH	3rd Storm	-
				yrs.
3. Rainfall Depth (P)				inches
4. Runoff Curve Number (CN) = See other side for computation				
5. Runoff Depth (Q) Use P, CN, and Table 2-1.				Inches
6. Time of Concentration (T) = homeometric See other side for computations (check one) V Velocity Method V Lag-CN Method V Other	rs.	X		[
7. Unit Peak Discharge (q)			csm/incl	of Q
Use T _c and Figure 5-2		X	1	
8. <u>Drainage Area</u> $\left[\frac{DA(acres)}{640(ac/sm)}\right] = \left[\frac{640}{640}\right]$] =		sq. mile	i 25
		X) 1 1
*9. Ponding and Swampy Area Peak Factor Only use % PND, F and Table E-3;				
when PND is spreadout in watershed and not related to T clow path.		=		
10. Peak Discharge Area Factor where q = Steps #5 x 7 x 8 x 9				cfs

^{*}If the adjustment is not applicable, enter a Factor of 1.0.

TR-55 GRAPHICAL (T_) METHOD, PEAK DISCHARGE WORKSHEET (CONT.)

Steps from other side

4. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or Area (ácres) (4)	Product (3)x(4) (5)
		Totals =		

CN (weighted) = $\frac{\text{total col. 5}}{\text{total col. 4}}$ use CN =

- 5. Time of Concentration (T_c) Select computation method, (a) is recommended.
 - (a) Velocity Method

Reach	Description of Flow $\frac{1}{}$	Length (ft.)	Velocity (ft/sec) (4)	Travel Time (sec.) (3) : (4)
7./				

 $\frac{1}{2}$ Use Figure 3.1 for overland flow portion of travel time.

т	_ Total Travel Time (sec.) _	Г 7 _	
c	3,600 (sec./hr.)	3,600	

- (b) Lag-CN Method
 - (1) Unadjusted Lag (L)
 Use HL, S, CN, and Figure 3-3.

*(2) Hydraulic Length Modified Lag Factor
Use % HLM, CN, and Figure 3-4.

*(3) Impervious Area Lag Factor
Use % IMP, CN, and Figure 3-5.

(4) Constant $(T_c = 1.67L)$

(5) Time of Concentration (T_c) where $T_c = (1)x(2)x(3)x(4)$ hrs.

Х

Totals =

1.67

hrs.

(TR NOTICE 55-A, September 1981)







Soil Conservation Service P.O. Box 2890 Washington, D.C. 20013

November 12, 1981

ENGINEERING - TECHNICAL RELEASE NOTICE 55-A

SUBJECT: SAMPLE PEAK DISCHARGE WORKSHEETS FOR USE IN URBAN HYDROLOGY

Purpose. To supplement Technical Release 55, "Urban Hydrology for Small Watersheds," with a new appendix F.

Effective Date. Effective when received.

Explanation of changes. The enclosed appendix F supplements TR-55 with worksheets and examples for the computation of peak discharges for small watersheds. The appendix provides additional guidance on the use of the TR-55 techniques to improve accuracy and reproducibility of peak flow estimates.

Filing Instructions. Appendix F should be inserted in TR-55 inside the back cover, after appendix E. The notice may be filed inside the front cover. Page 2 of the table of contents should be updated by a pen & ink change to include appendix F.

<u>Distribution</u>. This notice should be distributed to all SCS offices that have copies of Technical Release 55 (dated January 1975).

Copies will be distributed from the National Office only to Federal agencies at their National Office level. States should make copies of this notice available to other Federal, State and local agencies who may be using Technical Release 55.

Additional copies may be ordered from Central Supply by using the order number: TR55A, or Non-SCS from the National Technical Information Service.

PAUL M. HOWARD

Deputy Chief for Technology
Development and Application

IM Howard

Enclosure

(TR Notice 55-A, September 1981)

DIST: TR-55A





APPENDIX F

SAMPLE PEAK DISCHARGE WORKSHEETS

Introduction

Peak discharge worksheets have been developed to provide guidance in the use of TR-55 procedures. The worksheets contain examples that illustrate the use of several TR-55 techniques.

Procedure: Chapter 4 (appendices D & E)

The primary procedure, using chapter 4 with appendices D and E, is illustrated by an example on page F-3. This procedure uses a fixed watershed shape relation (figure E-1) and a fixed lag curve number (CN) relation (figure 3-3). The peak discharge per inch of runoff is read from one of the charts in Figure D-2 using a watershed slope range, drainage area, and CN. Appendix E and urban adjustments may be applied to the chart value, if appropriate.

One of the adjustments, the watershed shape factor, is applied on the worksheet as a muliplication factor and requires a second reading of the Figure D-2 chart. This is a similar but easier to apply procedure than example E-4 in appendix E.

Procedure: Tabular Method (chapter 5)

The Graphical (T_c) - Peak Discharge Worksheet, page F-5, illustrates the procedure using figure 5-2 with a computed time of concentration (T_c) . The worksheet example uses the same input as the previous example, but shows a T_c computed by the Lag-CN method. The comparison of peak discharge at the bottom of page F-5 (1% difference between procedures) is meant to show how these procedures are related when a Lag-CN T_c is used. If the T_c is estimated more accurately by some method other than Lag-CN, the Graphical (T_c) procedure should be used. If you do not wish to calculate a T_c or information to develop a T_c is not available, the primary chapter 4 (appendices D and E) procedure is recommended.

Procedure: Tabular Method (chapter 5)

The Tabular Method, a manual procedure to determine peak discharges for complex watersheds, is contained in Chapter 5. Tables 5-1 and 5-2 are samples of how a worksheet can be set up for this procedure.

Use of Worksheets

The slope range (flat, moderate or steep) used in appendices D and E is the average watershed (land) slope. This is not a channel slope. The base slope for each range is given on page E-l and the factors for interpolation when using other than the base slope is in table E-l.

The worksheets in this appendix give guidance as to which adjustments are required and which, when applicable, are recommended for each procedure. However, some of those recommended may be required modifications in some regions. If not used on the worksheet, a factor of 1.0 is used in the multiplication.

Do not use the ponding and swampy adjustment factor for the design point (table E-2) if the approximate routing procedures in chapter 7 (figures 7-1 or 7-2) are to be used at the design point. This will double count the storage.

A present urban condition is used in the worksheet examples to show how the urban adjustments can be used to estimate peak discharges from watersheds with existing urban areas. The references to future curve numbers in relation to figures 3-4, 3-5 and figures 4-1, 4-2, will be removed in the next revision of TR-55.

Blank worksheets, pages F-7 and F-9 are included.

Pr	oject AN	Y CREEK @ US RT. 242		Ву	HH	<u>K</u>	Date	9/2	9/81
	HC	WARD COUNTY, SOME STAT	TE	Che	cked _	りなべい	Date	7/3	12/
		scharge Computations for up to 3 Store							
1.	Data: Wate	ershed Condition = Present				(p	resent	or fut	ure).
	Drainage	Area (DA) = 200 acres.	Ave.	Watersho	ed Slo	pe (S)	=	2	%.
2.	Runoff Curv	ve Number (CN)							
	Hydrologic Soil Group Appendix B)	Land Use Description Include Treatment, Practice & Condit (Table 2-2)	ion	CN (Table	2-2)	% or (acr	es)	Prod (3)x (5	(4)
	С	Cultivated Wo Conservation Trea	tment	88	b	12	0	105	60
	С	Industrial Area		91		50	3	45	50
	С	Residential - 1/8 Ac		90)	18	3	162	20
	С	Paved Parking Areas		98		12	-	117	6
- 11	Alexandria Cardington								
-				Totals	=	20	0	1790	06
CN	(weighted)	= · total col. (5)	25	89.53	-;	use C	N =	9() ,
3.	Rainfall Fi	requency (F)		Storm OyR.	2nd :	Storm		Storm	yrs.
	Rainfall De	epth (P)		4.0	5	. 0	6.	.5	inches
4.	Dunaff Dans	- L (0)				-			1
~ *	Use P, Ch	N, and Table 2-1.	2	1,92		88 ×	5.	34	inches
5.	Use S, DA	Discharge (q) A, CN, and Figure D-2. a) X Flat (S = less than 3%)	t f h t		80] cfs/i	nch of G
	labeled:	Moderate (S = 3% to 7.9%) Steep (S = 8% & greater)		1 1 1 1 1	;	ĸ ,		1 1 0	
*6.		Slope Factor , and Table E-1.			1.2	2 9			
7.	Peak Discha	erge (q _p) = Steps #4 x 5 x 6	3	01	40	i	55		cfs
	10								

Steps Peak Discharge Computations with Adjustments

8. Data: Obtain if Adjustments are Applicable

Ponding and Swampy areas (PND) = 4 acres, 2 % of DA

Impervious Area (IMP) = 60 acres, 30 % of DA

Total Hydraulic Length (HL) = 7600 feet

Hydraulic Length Modified (HLM) = 3800 feet, 50 % of HL

	Hydraulic Length Modified (HLM) = 3800 f	eet, <u>5</u>	O % of Hi	٠	
		1st Storm	2nd Storm	3rd Storm	
	Rainfall Frequency (F) from Step 3	10 yr	25 YR	100 YR	yrs.
	Peak Discharge (qp) from Step 7	301	400	55/	cfs
		X	X	X	
*9。	Ponding and Swampy Area Peak Factor Use % PND, F, and Tables E-2, 3 or 4.	.81	.83	.87	
	Location in A at Design Point (E-2) Watershed: Center or Spreadout (E-3) Upper Reaches (E-4)		i I I		
*10.	Watershed Shape Peak Factor Use HL with Figure E-1 and read; Equiv. Drainage Area (EDA) = 400 acres.	i !	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		; ; ; ; ;
	Use Figure D-2 graph from Step 5, CN, and EDA Equiv. Peak/Inch Runoff $(q_e) = 125$ cfs/in.	for;	1		
	Factor =	1 	X		
	Factor =		0.78		
		i I [-	X		
*11.	Impervious Area Peak Factor Use % IMP, CN and Figure 4-1.		1.09		!
	and right in		Х		
*12.	Hydraulic Length Modified Peak Factor Use % HLM, CN and Figure 4-2.		1.17		
	, , , , , , , , , , , , , , , , , , , ,		=		
13.	Adjusted Peak Discharge (qp)	243	330	477	cfs
	$q_p = q_p$ (from Step 7) x Steps #9 x 10 x 11 x	12			

* If the adjustment is not applicable, enter a Factor of 1.0

URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55) PEAK DISCHARGE WORKSHEET FOR GRAPHICAL (T_c) METHOD (FIGURE 5-2)

Project ANY CREEK @ US R+ 242	By R Date 9/29/81
HOWARD COUNTY, SOME ST	TATE Checked WHM Date 9/30/8
Steps Peak Discharge Computation for up to 3	storms: Type <u>II</u> , Duration <u>24</u> hours.
1. Data: Watershed Condition = Pres	sent (present or future).
Drainage Area (DA) = 200 acres.	Ave. Watershed Slope (S) =
Ponding and Swampy areas (PND) = 4	
Impervious Area (IMP) = 60	
Total Hydraulic Length (HL) = $\frac{760}{100}$ Hydraulic Length Modified (HLM) = $\frac{380}{100}$	
	
	1st Storm 2nd Storm 3rd Storm
2. Rainfall Frequency (F)	10 yr 25yr 100 yr yrs.
3. Rainfall Depth (P)	4.0 5.0 6.5 inches
4. Runoff Curve Number (CN) = 90 See other side for computation	
5. Runoff Depth (Q) Use P, CN, and Table 2-1.	2.92 3.88 5.34 inches
6. Time of Concentration (T _c) = 0.94 hrs See other side) Velocity Method	
for computations Lag-CN Method (check one)	х
7. Unit Peak Discharge (q) Use T and Figure 5-2	335 csm/inch of Q
C -	X
8. <u>Drainage Area</u> $\begin{bmatrix} DA(acres) \\ 640(ac/sm) \end{bmatrix} = \begin{bmatrix} 2.00 \\ 640 \end{bmatrix}$	0.31 sq. miles
	X
*9. Ponding and Swampy Area Peak Factor Only use % PND, F and Table E-3;	.81 .83 .87
when PND is spreadout in watershed and not related to T flow path.	=
10. Peak Discharge Area Factor where q = Steps #5 x 7 x 8 x 9	246 334 482 cfs
Peak composisons	246/243 334/330 482/477 (Te)
*If the adjustment is not applicable, enter a Factor of 1.0.	(Difference in Methods = 1%) Pour F.4

TR-55 GRAPHICAL (T) METHOD, PEAK DISCHARGE WORKSHEET (CONT.)

Steps from other side

4. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% ey Area (acres) (4)	Product (3)x(4) (5)
С	Cultivated W/o Conservation Treatment	88	120	10560
С	Industrial Area	91	50	4550
С	Residential - Vo Ac	90	18	1620
C	Paved Parking Areas	98	12	1176
		Totals =	200	17906

CN (weighted) =
$$\frac{\text{total col. 5}}{\text{total col. 4}} \left[\frac{17906}{200} \right] = \frac{89.53}{200}$$
; use CN = 90

Time of Concentration (T_c) Select computation method, (a) is recommended.

(a) Velocity Method

Reach	Description of Flow $rac{1}{}'$	Length (ft.) (3)	Velocity (ft/sec) (4)	Travel Time (sec.) (3) : (4)
La Figure 3	1 for overland flow portion of travel time		Totals =	

hrs.

sec.

 $T_c = \frac{\text{Total Travel Time (sec.)}}{3,600 \text{ (sec./hr.)}} = \boxed{\frac{3,600}{3,600}}$

(b) Lag-CN Method

(1) Unadjusted Lag (L) Use HL, S, CN, and Figure 3-3. (7600, 2%, 90)

*(2) Hydraulic Length Modified Lag Factor Use % HLM, CN, and Figure 3-4. (50%, 90)

*(3) Impervious Area Lag Factor Use % IMP, CN, and Figure 3-5.
(30%, 90)
(4) Constant (T_c = 1.67L)

(5) Time of Concentration (T_c) where $T_c = (1)x(2)x(3)x(4)$ 0.8 hrs.

0.88

0.80

1.67

0.94 hrs.

(TR NOTICE 55-A, September 1981)

Project	Ву .		-	Date		
	Che	cked _		Date		
Steps Peak Discharge Computations for up to 3 Storms:	туре	II_,	Durat	ion _	24	hours.
1. <u>Data</u> : Watershed Condition =			(pı	esent	or fu	ture).
Drainage Area (DA) = acres. Ave	. Watersh	ed Slop	pe (S)	=		<u></u> %•
2. Runoff Curve Number (CN)						
Hydrologic Soil Group (Appendix B) Land Use Description Include Treatment, Practice & Conditio (Table 2-2)			% or (acr	es)	Prod (3)x (2	(4)
		-				
	Totals	=				
CN (weighted) = $\frac{\text{total col.}(5)}{\text{total col.}(4)}$ = =		-;	use C	v) =		
	Lst Storm	2nd	Storm	3rd	Storm	
3. Rainfall Frequency (F)			-			yrs.
Rainfall Depth (P)						inches
4. Runoff Depth (Q) Use P, CN, and Table 2-1.			K			inches
5. Basic Peak Discharge (q) Use S, DA, CN, and Figure D-2. For graph labeled: S = 1ess than 3%) Moderate (S = 3% to 7.9%) Steep (S = 8% & greater)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	K			inch of (
6. Watershed Slope Factor Use S, DA, and Table E-1.			=			1
7. Peak Discharge (q _p)						cís
where $q_p = \text{Steps } \#4 \times 5 \times 6$						

TR-55, CHAPTER 4 (APPENDICES D & E), PEAK DISCHARGE WORKSHEET (CONT.)

	Peak Discharge Computations with Adjustments					
8.	Data: Obtain if Adjustments are Applicable					
	Ponding and Swampy areas (PND) =					
	Impervious Area (IMP) =a	acres,		% of DA	1	
	Total Hydraulic Length (HL) =					
	Hydraulic Length Modified (HLM) =	feet,		% of HI		
		1st	Storm	2nd Storm	3rd Storm]
	Rainfall Frequency (F) from Step 3				Jed Deorm	1
	intitute requestey (1) from otep 3	L				yr.
	Peak Discharge (q _p) from Step 7					cf
	r		X	X	X	.j
*9.	Ponding and Swampy Area Peak Factor Use % PND, F, and Tables E-2, 3 or 4. Location in at Design Point (E-2)					
	Watershed: Center or Spreadout (E-3) (check one) Upper Reaches (E-4)					
10.	Watershed Shape Peak Factor Use HL with Figure E-1 and read; Equiv. Drainage Area (EDA) =acres					! ! !
	Use Figure D-2 graph from Step 5, CN, and EDA Equiv. Peak/Inch Runoff (q _e) = cfs/in.	for;		t		1 1
	Factor =	1		X		ļ
	Factor = x =					
		!	<u></u>	X	!	1
11.	Impervious Area Peak Factor Use % IMP, CN and Figure 4-1.	1				1
	on and rigure 4-1.	1	-	Х	!	1
12.	Hydraulic Length Modified Peak Factor Use % HLM, CN and Figure 4-2.	1		1		
	ose % mur, on and rigure 4-2.	1		_	1	1

13. Adjusted Peak Discharge (q_p) $q_p = q_p \text{ (from Step 7) x Steps #9 x 10 x 11 x 12}$

 $[\]mbox{\ensuremath{\star}}$ If the adjustment is not applicable, enter a Factor of 1.0

URBAN HYDROLOGY FOR SMALL WATERSHEDS (TR-55) PEAK DISCHARGE WORKSHEET FOR GRAPHICAL (T_C) METHOD (FIGURE 5-2)

Proj	ject	Ву	D	ate	_
		Checke	d D	ate	
Ste	os Peak Discharge Computation for up to 3	storms: Typ	e <u>II</u> , Dura	tion <u>24</u> ho	urs.
1,	Data: Watershed Condition =		(pre	sent or futu	re).
	Drainage Area (DA) = acres.	Ave. Watersh	ed Slope (S)	=	_ %.
	Ponding and Swampy areas (PND) =	acres,	%	of DA	
	Impervious Area (IMP) =	acres,	%	of DA	
	Total Hydraulic Length (HL) =	feet			
	Hydraulic Length Modified (HLM) =	feet, _	%	of HL	
		1st Storm	2nd Storm	3rd Storm]
2.	Rainfall Frequency (F)			Std Storm	yrs.
3.	Rainfall Depth (P)				fnaha
			1,		inche
4.	Runoff Curve Number (CN) = See other side for computation				
5.	Runoff Depth (Q) Use P, CN, and Table 2-1.				inche
6.	Time of Concentration (T) = hrs See other side for computations (check one) Lag-CN Method Other Other Check one Other Othe	 	1 1 1 1 1 1 X	·	
7.	Unit Peak Discharge (q) Use T and Figure 5-2		1	csm/inc	n of Q
			X	i I	
8.	$\frac{\text{Drainage Area}}{640 (\text{ac/sm})} = \frac{1}{640}$		1	sq. mil	: es
			X		1
*9.	Ponding and Swampy Area Peak Factor Only use % PND, F and Table E-3;				
	when PND is spreadout in watershed and not related to T $_{ m C}$ flow path.		=	1	
10.	Peak Discharge Area Factor where q = Steps #5 x 7 x 8 x 9				cfs

^{*}If the adjustment is not applicable, enter a Factor of 1.0.

TR-55 GRAPHICAL (T_c) METHOD, PEAK DISCHARGE WORKSHEET (CONT.)

Steps from other side

4. Runoff Curve Number (CN)

Hydrologic Soil Group (Appendix B)	Land Use Description Include Treatment, Practice & Condition (Table 2-2)	CN (Table 2-2) (3)	% or Area (ácres) (4)	Product (3)x(4) (5)
		Totals =		

			_	1		-
CN	(weighted) =	total col. 5 total col. 4		=;	use CN =	

5. <u>Time of Concentration</u> (T_c) Select computation method, (a) is recommended.

(a) Velocity Method

Reach	Description of Flow $rac{1}{}'$	Length (ft.) (3)	Velocity (ft/sec) (4)	Travel Time (sec.) (3) : (4)
1/,, Fi 3	1 for overland flow portion of travel time		Totals =	

 $^{1/}$ Use Figure 3.1 for overland flow portion of travel time.

$T_{C} = \frac{\text{Total Travel Time (sec.)}}{3,600 \text{ (sec./hr.)}}$	=	3,600	=		hrs.
----------------------------------------------------------------------------	---	-------	---	--	------

(b) Lag-CN Method

(1)	Unadju	ıste	d La	ag (1	L)		
	Use	HL,	S,	CN,	and	Figure	3-3.

*(2) Hydraulic Length Modified Lag Factor
Use % HLM, CN, and Figure 3-4.

*(3) Impervious Area Lag Factor
Use % IMP, CN, and Figure 3-5.

(4) Constant ($T_c = 1.67L$)

(5) Time of Concentration (T_c) where $T_c = (1)x(2)x(3)x(4)$ hrs.

sec.

x

x

1.67

hrs.

(TR NOTICE 55-A, September 1981)